

THE VASCULAR FLORA OF THE OGALLALA ECOTONE ON THE DEMPSEY DIVIDE, ROGER MILLS COUNTY, OKLAHOMA

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ABSTRACT

A floristic inventory of the 3,755-ha Thurmond Ranch and immediate vicinity, located in southern Roger Mills County, Oklahoma, was conducted in 2001. Because of its unusual geologic and topographic setting, which has given rise to a heterogeneous environment and long history of human habitation, the site has been the subject of intense archeological and paleoclimatological research since the early 1980s. The inventory documented 85 families, 286 genera, and 470 species of vascular plants in the study area. The five most species-rich families, Asteraceae, Poaceae, Fabaceae, Euphorbiaceae, and Cyperaceae, collectively account for 51% of the species. Non-native species constitute 10% of the total flora. Four North American species probably were introduced by Euro-Americans, and Native Americans may have introduced three species. Populations of four species tracked by the Oklahoma Natural Heritage Inventory were discovered, and *Epilobium leptophyllum* is reported for the first time in Oklahoma. Collection data show a marked floristic difference between the Tertiary Ogallala Formation and the Permian redbeds along the ecotone. Nineteen major vegetation alliances were identified based on observational data, including three woodland alliances, seven shrubland alliances, and eight herbaceous alliances. Mixed-grass prairie plant communities dominate the study area landscape.

RESUMEN

Se realizó un inventario florístico de las 3,755-ha del Thurmond Ranch y alrededores, localizado en el sur del condado de Roger Mills, Oklahoma, en 2001. Debido a las inusuales características geológicas y topográficas, que dieron lugar a un ambiente heterogéneo y larga historia de ocupación humana, el lugar ha sido objeto de intensa investigación arqueológica y paleoclimatológica desde principio de los 1980. El inventario documentó 85 familias, 286 géneros, y 470 especies de plantas vasculares en el área de estudio. Las cinco familias más ricas, Asteraceae, Poaceae, Fabaceae, Euphorbiaceae, y Cyperaceae, tienen conjuntamente el 51% de las especies. Las especies no nativas comprenden el 10% de la flora total. Cuatro especies norteamericanas fueron introducidas probablemente por Euro-Americanos, y los nativos americanos puede que hayan introducido tres especies. Se descubrieron

poblaciones de cuatro especies seguidas por el Oklahoma Natural Heritage Inventory, y *Epilobium leptophyllum* se cita por primera vez en Oklahoma. Los datos de colección muestran una clara diferencia florística entre la formación terciaria de Ogallala y las capas sedimentarias rojizas del pérmico a lo largo del ecotono. Se identificaron diecinueve alianzas de vegetación basadas en datos de observación, que incluyen tres alianzas arbóreas, siete arbustivas, y ocho herbáceas. Las comunidades mixtas de pradera dominan el paisaje del área de estudio.

INTRODUCTION

The name “Dempsey Divide” was coined by Thurmond (1990) to refer to the uplands between the Washita and North Fork of the Red Rivers in western Oklahoma. Unusual geologic and topographic conditions in the area have given rise to a heterogeneous environment, an ecology and biota that are distinctive in the southern Great Plains, and a long history of human habitation. Consequently, the Dempsey Divide has been the subject of intense archeological and paleoclimatological research since the early 1980s (Bement 2000; Bement & Buehler 1994, 1998; Buehler 1997; Thurmond 1990, 1991a, 1991b, 1991c, 1997; Thurmond & Picarella 1999; Thurmond et al. 1998; Thurmond & Wyckoff 1998, 1999, 2001). To complement that work, a floristic investigation of the Dempsey Divide was conducted in 2001. The primary objective was to document all native and naturalized vascular plants growing in the area. A secondary objective was to gather baseline data about the plant communities present. This paper summarizes the results of that work.

Study Area

Most of the research described here was conducted on the Thurmond Ranch, a 3,755-ha, contiguous block in southern Roger Mills County, Oklahoma (Fig. 1). The ranch is southwest of Cheyenne, the county seat, and is situated at the southeast edge of the High Plains physiographic province (Bruner 1931). It is on the north side of the Dempsey Divide and extends from the crest of the divide northward to the edge of the Washita River valley.

Brokenleg, Plum, and Sergeant Major Creeks, three short, north-flowing, steep-gradient tributaries of the Washita River, drain the western, northern, and central parts of the ranch, respectively. Killough Creek and Higgins Creek, tributaries of Sergeant Major Creek, traverse the eastern part. These streams have incised a dense, dendritic drainage network on the north side of the divide, creating a canyon system characterized by arroyo cut-and-fill cycles (Schumm & Hadley 1957) operating on centennial and millennial time scales. The most recent incision cycle began around the turn of the 20th Century, triggered by the intense land use of the early post-1892 white settlement period. Maximum elevation on the ranch is 732 m above sea level in the southwest corner. Minimum elevation is 601 m in the northeast corner along Sergeant Major Creek.

The climate of west-central Oklahoma is continental and typified by marked seasonal variation (Curry 1970). Annual annual precipitation at Elk City, roughly 25 km southeast of the ranch, is 57 cm (Oklahoma Climatological

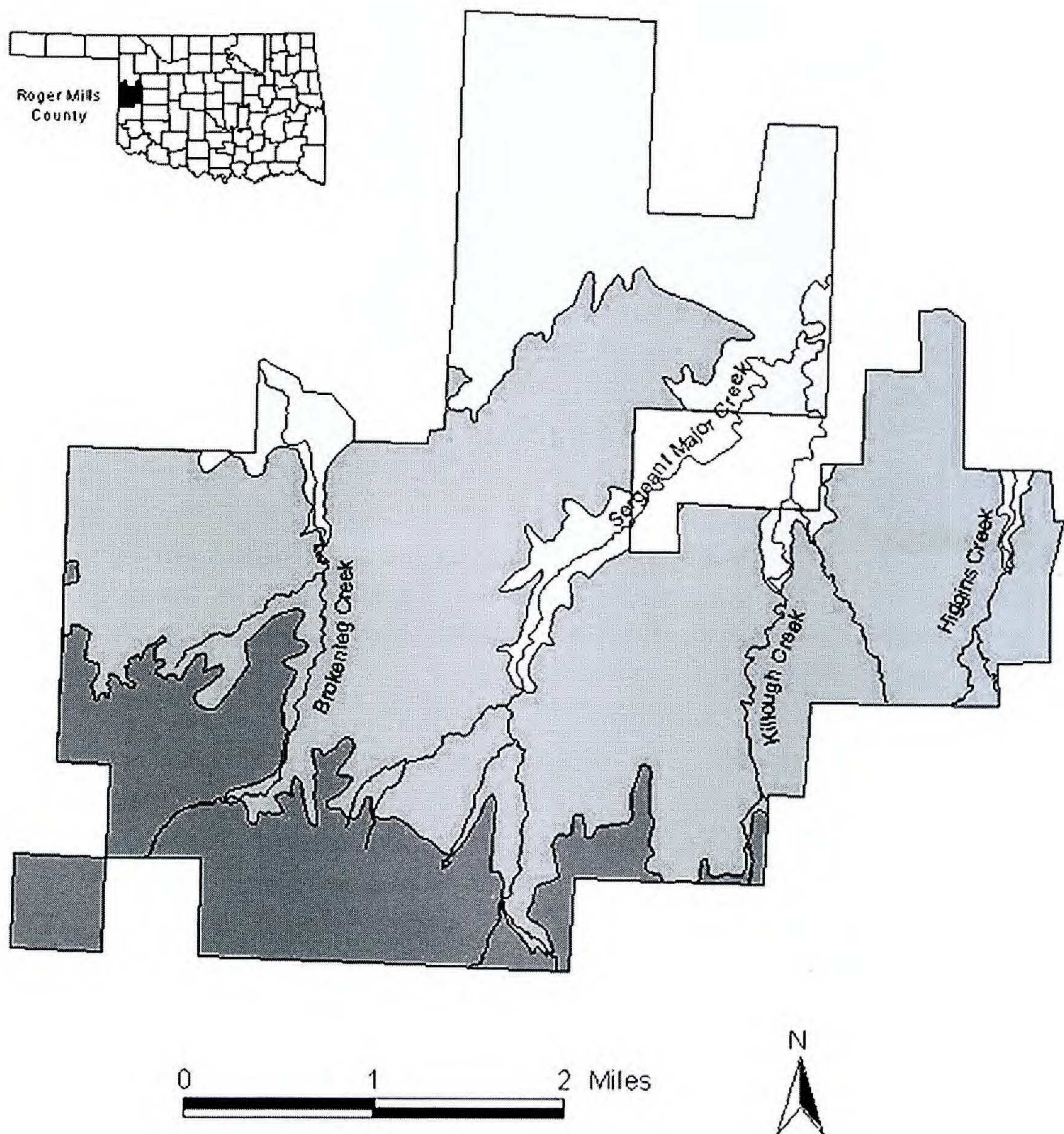


FIG. 1. The Thurmond Ranch, Roger Mills County, Oklahoma. **Dark gray** = Ogallala Formation, **gray** = Doxey Shale Formation, **light gray** = Cloud Chief Formation.

Survey 2002). More than 75% of the annual precipitation occurs from April through October, and precipitation is most abundant in May (12 cm) and least abundant in January (2 cm). Average annual temperature at Elk City is 15.8° C. Average January temperature is 2.3° C and average July temperature is 27.7° C. The average frost-free growing season is approximately 208 days (Curry 1970).

The ranch straddles a major geological and ecological boundary—the eastern outcrop edge of the Ogallala Formation, referred to here as the Ogallala ecotone. Three major geological formations occur on the Dempsey Divide on the ranch: the Tertiary period Ogallala Formation, and the Permian period Doxey Shale and Cloud Chief formations (Fig. 1). Thurmond et al. (2002) discuss the

geomorphology of each formation, but because differences among them have profoundly affected the local topography, vegetation, and history of human use, a brief summary follows.

The Ogallala Formation comprises late Miocene- and Pliocene-age, alluvial outwash from the Rocky Mountains. Its coarse sediments were deposited across the western Great Plains by braided streams, many of which arose in the Rocky Mountains where they were fed by episodically intense rainfall (Frye & Leonard 1957; Gustavson & Finley 1985; Gutentag et al. 1984; Reeves & Reeves 1996; Ryder 1996; Seni 1980). Much of the lower Ogallala is extremely sandy. It forms a gently rolling landscape atop the Dempsey Divide and was significantly reworked by wind into dunes and deflation basins in the late Pleistocene (Thurmond & Wyckoff 1998).

The Doxey Shale comprises discontinuous claystone and sandy siltstone beds deposited during the Permian period on a tropical coastal floodplain. It generally is dense, fine textured, and resists downward percolation of groundwater. Consequently, many streams leading off the Ogallala Formation are spring fed at the Ogallala-Doxey Shale contact. Seeps and small springs do occur in the Doxey Shale outcrop, but only in particularly wet years. The Doxey Shale is fairly resistant to erosion, and its outcrop is typified by deep canyonlands.

Beneath the Doxey Shale is the Permian Cloud Chief Formation (Carr & Bergman 1976), which comprises soft, finely laminated sandstone with thin layers of interbedded gypsum. The Cloud Chief erodes more evenly and readily than does the Doxey Shale, yielding a more gently rolling topography. Upon transition from the Doxey Shale to the Cloud Chief, slope gradients decrease dramatically and stream valleys broaden.

Geologically, the Ogallala ecotone is an unstable and dynamic landscape. Deposition of the Ogallala Formation ended in the Late Pliocene, and the eastern edge of the formation has been eroding episodically westward since. The outcrop edge on the ranch is estimated to have retreated more than 1.5 km since the end of the last glaciation, 15,000–10,000 years B.P. (Thurmond & Wyckoff 2001).

The complex geology and intensely dissected terrain on the north side of the Dempsey Divide have yielded a patchwork of soils. Deep, calcareous, coarse-textured mollisols dominate on the Ogallala and have a much higher effective precipitation than do soils on the Permian outcrops. Extensive exposures of weathering bedrock characterize the Doxey Shale, except where gully fills have facilitated the development of isolated alfisols, inceptisols, and mollisols. These same soil types achieve greater expression on the more gentle landscape of the Cloud Chief outcrop, but evaporites discourage plant growth in many eroded areas (Thurmond et al. 2002).

The geological and topographical setting of the Dempsey Divide has pro-

vided unusual environmental conditions for the development of the region's biota. Diverse terrestrial, palustrine, and riverine natural communities interdigitate along the Ogallala ecotone, and humans have long taken advantage of the natural resources available in this environment. A remarkable concentration of hunter-gatherer campsites is associated with the ecotone, and it has been inferred that these sites were situated to make most efficient use of the diverse floral and faunal communities along this boundary (Thurmond 1990, 1991b).

Human occupation of the Ogallala ecotone on the Dempsey Divide has not been continuous over time. Prehistoric habitation was most intense during the particularly wet periods of the 10th and 2nd millennia before present (Thurmond & Wyckoff 2001). Settlement by Euro-Americans began in earnest in the late 1800s. Between the 1890s and the early 1900s, homesteaders exploited the landscape for crop and livestock production. Approximately 17% (630 ha) of the ranch was farmed, and cattle and horses intensively grazed the rest. Homesteaders began to leave around 1915, and the Thurmond family purchased most of the land composing the ranch between 1915 and 1950. The last of the cultivated land was reseeded to grass in the early 1960s, and land use has been limited to low-intensity grazing by cattle since that time. Deep drilling for natural gas has caused localized disturbance since the late 1970s. Erosion on the ranch has been controlled by revegetation efforts and the construction of erosion control structures (Thurmond et al. 2002).

METHODS

Four major collecting trips were made during 2001 by two of the authors (CCF and CAM): 24–25 April, 30 May–1 June, 23–26 July, and 2–4 October. Sites with vegetation representative of the major vegetation alliances on each of the three major geologic formations were visited during each trip. For most species, at least one voucher was collected on each formation on which it was encountered. Information was recorded about the abundance of species and the vegetation alliances in which they occurred. Opportunistic collecting by one of the authors (JPT) and by Hillary Loring of the Kansas Biological Survey netted additional specimens. A complete set of vouchers is deposited in the R.L. McGregor Herbarium (KANU), University of Kansas. Duplicate specimens for many collections are deposited in the Robert Bebb Herbarium (OKL), University of Oklahoma.

Presence/absence data were recorded in a species \times geological formation matrix. These data were used to compare the floras of the formations using Dice's coefficient for 1) all species and 2) native species only. Coefficients were obtained using SPSS 9.0 (SPSS Inc. 1998).

Major vegetation alliances tentatively were identified using observational data. Dominant species, associated species, and habitat data were used to identify alliances following the hierarchical classification of Hoagland (2000).

RESULTS AND DISCUSSION

General Characteristics of the Flora

More than 1,400 numbers (3,100 specimens including duplicates) were collected in the study area. These represent 85 families, 286 genera, and 470 species of vascular plants (Table 1). Four additional species were documented in the study area (Thurmond et al. 2002), but vouchers for these were not verified at KANU so they are excluded from this list. The five most species-rich families are Asteraceae (81, 5 non-native), Poaceae (77, 20 non-native), Fabaceae (44, 3 non-native), Euphorbiaceae (19), and Cyperaceae (17). These five families collectively account for 51% of the species currently known in the study area.

Non-natives compose 10% of all of the species documented. The vast majority of these are Eurasian species introduced accidentally or intentionally since the time of Euro-American settlement. *Campsis radicans*, *Carya illinoensis*, *Catalpa speciosa*, and *Maclura pomifera*, although native to Oklahoma, likely were introduced intentionally by homesteaders. Native Americans may have introduced three other species (*Acorus calamus*, *Echinochloa muricata*, and *Juglans nigra*) in the study area; Thurmond et al. (2002) discuss these taxa in detail. Among the five largest families in the study area, introduced species are proportionally highest in the Poaceae (26%). Three families (Acoraceae, Bignoniaceae, and Tamaricaceae) and 32 genera are represented by non-native species only. Non-native species dominate one plant community on the ranch: the aquatic *Nasturtium officinale* herbaceous alliance.

Populations of four species tracked by the Oklahoma Natural Heritage Inventory (Oklahoma Natural Heritage Inventory 2001) were discovered during the inventory: *Echinocereus reichenbachii*, *Eriogonum alatum*, *Monarda pectinata*, and *Zinnia grandiflora*. All grow on rocky, mixed-grass prairies on the ranch, except *Monarda pectinata*, which is confined to sand prairies and sandsage shrublands.

Epilobium leptophyllum is reported for the first time in Oklahoma. This herbaceous perennial grows in fens, marshes, and seeps throughout the northern and central Great Plains (Great Plains Flora Association 1991) southward to Meade County, Kansas (Great Plains Flora Association 1977). A small population on a seepy, open slope near the Ogallala-Doxey Shale contact is 180 km south-southeast of the nearest Kansas population (Freeman et al., in press).

The number of species documented on each of the three formations in the study area is summarized in Figure 2. Nearly 900 occurrences (species \times formation combinations) were recorded. Despite the fact that all collections were made during a single growing season, these records provide insights into the general floristic patterns in the study area.

Thirty percent of all species (140) were documented on all three formations, but there is a clear floristic difference on either side of the Ogallala ecotone (the

TABLE 1. Numerical summary of the vascular flora of the Ogallala ecotone on the Dempsey Divide.

Group	Families	Genera	Species		
			Native	Non-native	Total
Pteridophytes	2	2	2	0	2
Gymnosperms	1	1	2	0	2
Angiosperms	82	283	418	48	466
Monocots	13	61	89	21	110
Dicots	69	222	329	27	356
Total	85	286	422	48	470

Tertiary/Permian outcrop boundary). Floristic similarity, as estimated by Dice's coefficient (D) using all species, was greater between the Cloud Chief and Doxey Shale formations ($D = 0.764$) than between the Cloud Chief and Ogallala formations ($D = 0.625$) or the Doxey Shale and Ogallala formations ($D = 0.577$). The same calculation using native species only yielded slightly higher coefficients but congruent results ($D = 0.785$ for Cloud Chief and Doxey Shale, $D = 0.626$ for Cloud Chief and Ogallala, $D = 0.594$ for Doxey Shale and Ogallala). Twenty-five percent of all species (119) were found only on the Ogallala. A large majority of these are psammophytes. Mesophytes and hydrophytes account for roughly 25% of the Ogallala-only species. Non-native species are distributed roughly proportionally to the species richness of each of the formations (Fig. 2).

Vegetation Alliances

Nineteen vegetation alliances are recognized, but accurate identification and characterization of all alliances, as well as finer resolution of association-level patterns, must await further studies. Given the dearth of vegetation studies for western Oklahoma (Hoagland 2000), future work likely will be useful in refining the existing state vegetation classification.

Woodland Alliances.—A woodland is defined as an open stand of trees with crowns not usually touching and canopy coverage of 25–60% (Hoagland 2000). Structural diversity often is less than in a forest, and trees usually are taller than 5 m (Lauver et al. 1999). Three woodland alliances were identified on the ranch: the *Sapindus saponaria* woodland alliance, the *Populus deltoides* woodland alliance, and the *Salix nigra* woodland alliance. All three occur along riparian corridors, especially on the lower Doxey Shale and on the Cloud Chief formations. Woodland alliances are best developed along the mainstems of Brokenleg, Plum, and Sergeant Major Creeks, but they also extend up the larger tributaries and occur near springs and seeps at the Ogallala-Doxey Shale contact.

Celtis reticulata, *Juglans microcarpa*, *Juniperus virginiana*, *Robinia pseudoacacia*, *Sideroxylon lanuginosum*, and *Ulmus americana* are common trees in these alliances. *Cornus drummondii*, *Forestiera pubescens*, *Rhus*

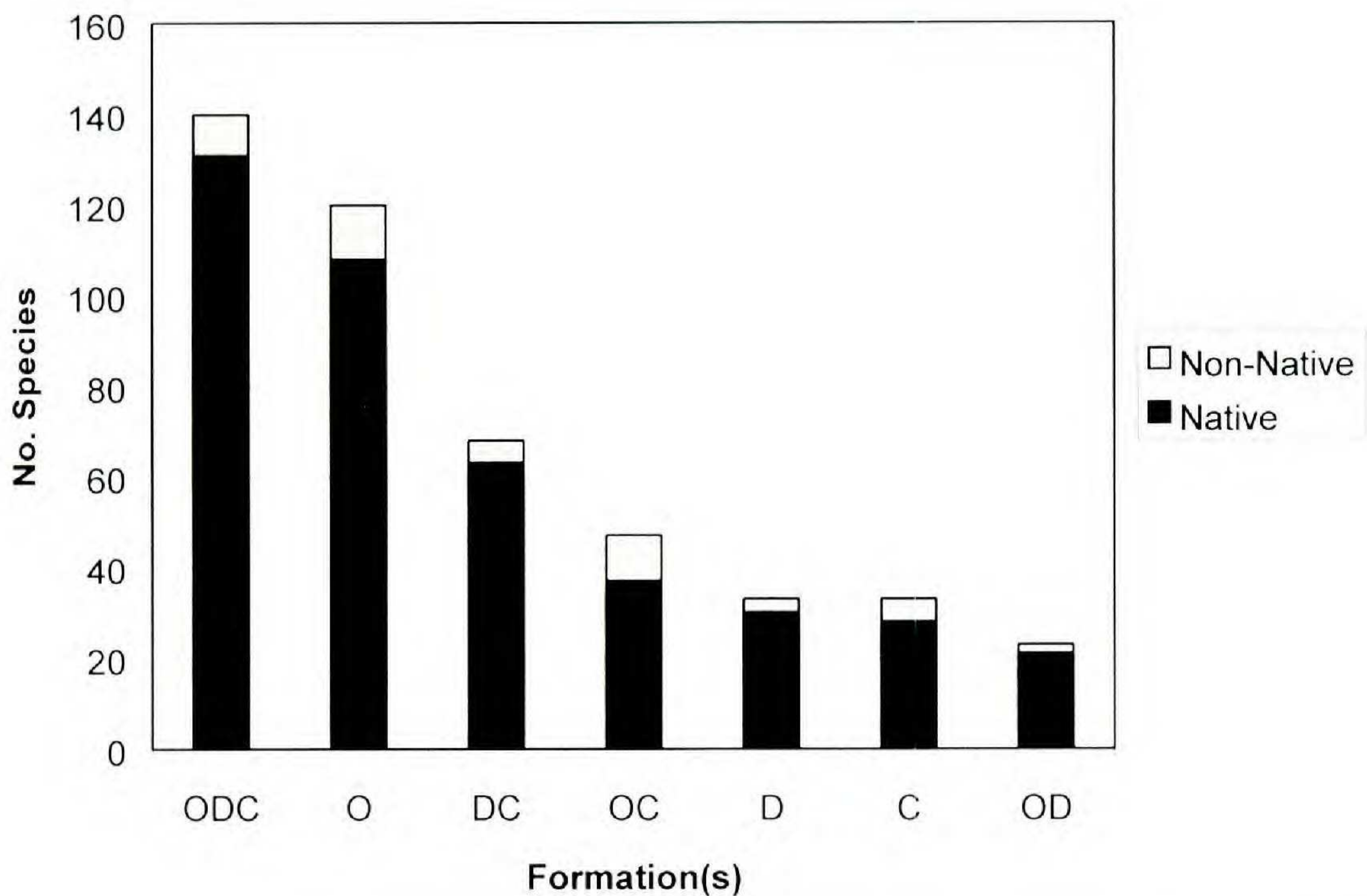


FIG. 2. Species occurrence by formation. **O** = Ogallala; **D** = Doxey Shale; **C** = Cloud Chief.

aromatica, *Rhus glabra*, and *Salix exigua* are typical shrub elements, with *Ampelopsis cordata*, *Parthenocissus quinquefolia*, *P. vitacea*, *Toxicodendron radicans*, and *Vitis acerifolia* the most common woody vines. Representative herbaceous species include *Carex austrina*, *C. bulbostylis*, *C. gravida*, *Chenopodium simplex*, *C. standleyanum*, *Elymus canadensis*, *E. virginicus*, *Galium aparine*, *G. circaezans*, *Geum canadense*, *Phytolacca americana*, and *Sanicula canadensis*. Species restricted to woodland habitats near the Ogallala-Doxey Shale contact are *Bidens bipinnatus*, *Botrychium virginianum*, and *Rubus bushii*.

Shrubland Alliances.—Shrubs or trees 0.5–5 m tall dominate a shrubland, individuals or clumps do not touch or overlap, shrub canopy cover generally is greater than 25%, and tree canopy cover is less than 25% (Hoagland 2000; Lauer et al. 1999). Seven shrubland alliances were identified on the ranch. Some upland sites on the Doxey Shale and Cloud Chief formations support large populations of *Mimosa borealis*, and this likely represents an undescribed, xerophytic, deciduous, shrubland alliance.

The *Quercus havardii* shrubland alliance and the *Artemisia filifolia* shrubland alliance are largely confined to deep dunes and alluvial sands above the Ogallala Formation. *Quercus havardii* and *Artemisia filifolia* are the dominant shrubs, respectively. *Sporobolus cryptandrus* and *Schizachyrium scoparium* are codominant graminoids in both alliances. Characteristic species in both types are *Ambrosia psilostachya*, *Amphiachyris dracunculoides*, *Andropogon hallii*, *Artemisia ludoviciana*, *Bouteloua curtipendula*, *B. hirsuta*, *Calylophus*

serrulatus, *Cenchrus spinifex*, *Chamaesyce glyptosperma*, *Croptilon hookerianum*, *Cyperus lupulinus*, *C. schweinitzii*, *Dalea candida*, *D. enneandra*, *Eriogonum annuum*, *E. longifolium*, *Liatris punctata*, *Machaeranthera pinnatifida*, *Mentzelia nuda*, *Mimosa borealis*, *Paronychia jamesii*, *Plantago patagonica*, *Prionopsis ciliata*, *Rhus aromatica*, *Stenosiphon linifolius*, *Thelesperma megapotamicum*, *Xanthisma texanum*, and *Yucca glauca*.

Two other shrubland alliances, the *Prunus angustifolia* alliance and the *Rhus aromatica* alliance, frequently are found on the Ogallala Formation, but they also occur in sandy, gravelly, or silty sites on Permian substrates. *Schizachyrium scoparium* occurs as a codominant in the former type and is a regular associate in the latter. Other associates include *Andropogon hallii*, *Bouteloua curtipendula*, *Croptilon hookerianum*, *Eriogonum annuum*, *Plantago patagonica*, *Prionopsis ciliata*, *Prunus gracilis*, *Rhus aromatica*, *Toxicodendron radicans*, and *Vitis acerifolia*.

Three shrubland alliances occur along streams and shorelines of ponds and reservoirs: the *Salix exigua* alliance, *Cephalanthus occidentalis* alliance, and *Tamarix chinensis*[= *Tamarix ramosissima*] alliance. Associates in all three types are *Aster subulatus*, *Baccharis salicina*, *Distichlis spicata*, *Panicum virgatum*, *Polygonum lapathifolium*, *Pascopyrum smithii*, *Pluchea odorata*, and *Populus deltoides*.

Herbaceous Alliances.—Herbaceous plants, usually with at least 25% cover, dominate the herbaceous alliances. Trees and shrubs form less than 25% cover (Hoagland 2000; Lauver et al. 1999). Herbaceous alliances, which include grasslands, are the predominant vegetation in the study area. Eight herbaceous alliances were identified on the ranch, five of which are grassland types.

The *Andropogon hallii* herbaceous alliance, called sand prairie, is a tall sod grassland alliance. The best examples occur on deep dune sands atop the Ogallala Formation, with isolated occurrences on well-drained, sandy or gravelly soils on the Permian substrates. *Artemisia filifolia*, *Prunus angustifolia*, *Quercus havardii*, and *Rhus aromatica* are typical shrubs. The sand prairie shares many of the herbaceous associates found in the *Quercus havardii* shrubland alliance and the *Artemisia filifolia* shrubland alliance. Additional associates are *Aristida purpurascens*, *Froelichia floridana*, *F. gracilis*, *Gaura villosa*, *Lechea tenuifolia*, *Oenothera rhombipetala*, *Penstemon buckleyi*, and *Polygonum tenue*.

Medium-tall sod grassland types, called mixed-grass prairies, dominate the northern three-quarters of the ranch on Permian substrates. Three types were identified: the *Bothriochloa laguroides* herbaceous alliance, *Schizachyrium scoparium*-*Bouteloua curtipendula* herbaceous alliance, and *Bouteloua curtipendula* herbaceous alliance. Additional work is needed to determine the extent and composition of these alliances, which share many species. *Gutierrezia sarothrae* and *Mimosa borealis* are characteristic shrubs. Herbaceous associates include *Allium drummondii*, *Ambrosia psilostachya*,

Ammoselinum popei, *Amphiachyris dracunculoides*, *Aristida purpurea*, *Artemisia ludoviciana*, *Aster ericoides*, *A. falcatus*, *A. fendleri*, *Bothriochloa ischaemum*, *Bouteloua curtipendula*, *B. hirsuta*, *Buchloë dactyloides*, *Callirhoë involucrata*, *Castilleja purpurea*, *Chaetopappa ericoides*, *Chamaesyce fendleri*, *Cirsium ochrocentrum*, *C. undulatum*, *Croton texensis*, *Dalea candida*, *D. enneandra*, *Eriogonum alatum*, *E. longifolium*, *Gaura coccinea*, *Grindelia squarrosa*, *Lesquerella gordonii*, *L. ovalifolia*, *Liatris punctata*, *Linum rigidum*, *Lygodesmia juncea*, *Machaeranthera pinnatifida*, *Penstemon albidus*, *Plantago patagonica*, *Schedonnardus paniculatus*, *Schizachyrium scoparium*, *Sporobolus compositus*, *S. cryptandrus*, *Stenosiphon linifolius*, *Tetranneuris scaposa*, *Thelesperma megapotamicum*, *Vulpia octoflora*, *Xanthisma texanum*, and *Yucca glauca*.

Two other grassland alliances occur along streams, shorelines of ponds and reservoirs, and marshes. Intermittently flooded habitats support the *Pascopyrum smithii* herbaceous alliance. Typical associates include *Aster subulatus*, *Cyperus odoratus*, *Echinochloa crusgalli*, *E. muricata*, *Hordeum jubatum*, *Muhlenbergia asperifolia*, *Phyla lanceolata*, *P. nodiflora*, *Pluchea odorata*, *Polypogon monspeliensis*, and *Schoenoplectus pungens*. Semipermanently flooded areas support the *Scirpus pungens* (misapplied as *Schoenoplectus americanus* in Hoagland [2000] and many earlier floristic works) herbaceous alliance. Associates are *Ammannia coccinea*, *Aster subulatus*, *Distichlis spicata*, *Cyperus odoratus*, *Echinochloa crusgalli*, *E. muricata*, *Eleocharis coloradoensis*, *E. macrostachya*, *E. montevidensis*, *E. rostellata*, *Fuirena simplex*, *Leersia oryzoides*, *Muhlenbergia asperifolia*, *Phalaris caroliniana*, *Poa arida*, *Juncus torreyi*, *Phyla nodiflora*, *Pluchea odorata*, *Potentilla paradoxa*, *Ranunculus cymbalaria*, *R. sceleratus*, *Rumex altissimus*, *Setaria parviflora*, and *Typha domingensis*.

The *Lesquerella (gordonii, ovalifolia)* herbaceous alliance occurs on rock outcrops and rocky or gravelly slopes on the Doxey Shale and Cloud Chief formations. Generally, perennial forbs contribute greater than 50% of the total herbaceous cover in this alliance. Typical associates include *Artemisia campestris*, *Bouteloua curtipendula*, *B. hirsuta*, *Hedeoma drummondii*, *Hedyotis nigricans*, *Heterotheca stenophylla*, *Krameria lanceolata*, *Oenothera macrocarpa*, *Schizachyrium scoparium*, *Scutellaria resinosa*, and *Tetranneuris scaposa*.

The *Nasturtium officinale* herbaceous alliance is found around springs and along spring runs. It is dominated by hydromorphic, rooted vegetation that grows in permanently flooded environments. Associates are *Eleocharis montevidensis*, *Leersia oryzoides*, *Muhlenbergia asperifolia*, and *Schoenoplectus pungens*. The abundance and persistence of many other species appear to depend on local microhabitat conditions.

Disturbed or degraded uplands on Permian formations often are similar to Hoagland's (2000) *Amphiachyris dracunculoides* herbaceous alliance. Char-

characteristic species of this annual grassland alliance are *Ambrosia psilostachya*, *Aristida oligantha*, *A. purpurea*, *Bothriochloa ischaemum*, *B. laguroides*, *Bouteloua curtipendula*, *B. hirsuta*, *Bromus japonicus*, *Chloris verticillata*, *Eragrostis curvula*, *Schizachyrium scoparium*, and *Sporobolus cryptandrus*.

Ruderal Sites.—Natural and semi-natural vegetation alliances typically contain areas in which the native vegetation is disturbed as a result of localized or widespread environmental or biological perturbations. Non-native species often colonize these ruderal sites, and in some cases, aggressive non-natives may spread and severely affect native plant communities. Parts of the ranch were cultivated prior to 1915, but all such areas have since been reseeded to native grasses and forbs. Many non-native species occupy these formerly cultivated sites. Other non-native species are found on the ranch around old farmsteads and newer building sites, along the shoulders of ranch roads, in corrals, and in sites where cattle congregate.

The most frequent non-natives in ruderal sites are *Aegilops cylindrica*, *Bothriochloa ischaemum*, *B. laguroides*, *Bromus catharticus*, *B. japonicus*, *Cynodon dactylon*, *Echinochloa crusgalli*, *Eragrostis curvula*, *Lactuca serriola*, *Medicago minima*, *Melilotus alba*, *M. officinalis*, *Rumex crispus*, *Salsola tragus*, *Setaria viridis*, *Sorghum halepense*, *Taraxacum laevigatum*, and *Tragopogon dubius*.

ANNOTATED CHECKLIST

Family names are arranged alphabetically within three major groups: pteridophytes, gymnosperms, and angiosperms. Genera, species, and infraspecific taxa are arranged alphabetically within each family. Nomenclature for scientific names and common names follows Freeman (2002). Names used in the Atlas of the Flora of the Great Plains (Great Plains Flora Association 1977) and Flora of the Great Plains (Great Plains Flora Association 1991) but synonymized in Freeman (2002) are identified as “A” and “F”, respectively. Additional notes clarify nomenclatural issues for some species. An asterisk (*) identifies non-native species as identified by the Great Plains Flora Association (1991) and Freeman (2002).

Relative frequency of each species on the ranch is estimated from the number of populations seen by the authors using a slightly modified version of the scale proposed by Palmer et al. (1995): abundant (5) = dominant or codominant in one or more plant alliances; frequent (4) = easily seen or found in one or more plant alliances (e.g., mixed-grass prairie or woodland) but not dominant in any plant alliances; occasional (3) = widely scattered but not difficult to find in one or more plant alliances; infrequent (2) = difficult to find with few individuals or colonies but found in several locations in one or more plant alliances; and rare (1) = very difficult to find and limited to one or few populations in one or more plant alliances.

Alliance data for each species are summarized by major habitat types as follows: **w** = woodlands (including riparian woodlands); **s** = sandy complex (including sand prairies, sandsage shrublands, and shinnery oak shrublands); **m** = mixed-grass prairies (including clayey, silty, sandy, gravelly, and rocky mixed-grass prairies, rock outcrops, and rocky slopes); **p** = palustrine communities (including seeps and marshes); **r** = riverine sites (including spring runs and streams); **l** = lacustrine communities (including ponds and reservoirs); and **u** = ruderal sites (including abandoned homesites, roadsides, and well sites).

Geologic formations from which specimens were collected, or in a few cases observed but not collected, are designated for each taxon by the following abbreviations: **O** = Tertiary Ogallala, **D** = Permian Doxey Shale, and **C** = Permian Cloud Chief. Collection numbers for voucher specimens are cited after any synonyms. Abbreviations for collector names are **F** (Craig C. Freeman), **L** (Hillary Loring), **M** (Caleb A. Morse), and **T** (J. Peter Thurmond).

PTERIDOPHYTES

EQUISETACEAE

Equisetum laevigatum A. Braun, Smooth scouring-rush, 2; p,r; O. F16890

OPHIOGLOSSACEAE

Botrychium virginianum (L.) Sw., Rattlesnake fern, common grape fern, 1; w,p; O. MF5973

GYMNOSPERMS

CUPRESSACEAE

Juniperus pinchotii Sudw., Pinchot juniper, 1; m; D. F16865, FM17942

Juniperus virginiana L. var. *virginiana*, Eastern red-cedar, 3; w,m; O,D,C. F16935, FM17689, FM17811, MF6386

ANGIOSPERMS

ACANTHACEAE

Ruellia humilis Nutt., Fringe-leaf wild-petunia, 2; s; O. MF6061

ACORACEAE

**Acorus calamus* L., European sweetflag, 1; p,r; O. MF5982

AGAVACEAE

Yucca glauca Nutt., Small soapweed, 4; s,m; O,D,C. MF6186, MF6406, MF6421, MF6435, MF6501

ALISMACEAE

Echinodorus berteroi (Spreng.) Fassett, Upright burhead, 2; l; D,C. [*E. rostratus* (Nutt.) Engelm.

ex A. Gray – A, F] FM17798, FM17881

AMARANTHACEAE

Amaranthus albus L., Tumbleweed amaranth, 2; l,u; O,D,C. FM17821, FM17930, FM18404

Amaranthus arenicola I.M. Johnst., Sandhill pigweed, 1; s; O. FM17698

Amaranthus blitoides S. Watson, Prostrate pigweed, 4; u; O,D,C. [*A. graecizans* L. – A, F] FM17603, FM17905, FM18339, MF6014, MF6170, MF6210

Amaranthus palmeri S. Watson, Palmer's pigweed, 1; u; O,D. L2001-51, MF6462

Amaranthus retroflexus L., Rough pigweed, Red-root pigweed, 1; u; O,D,C. FM17929, MF6392, MF6463

Froelichia floridana (Nutt.) Moq., Field snake-cotton, 2; s; O. FM17714

Froelichia gracilis (Hook.) Moq., Slender snake-cotton, 2; s,m; O. FM17657, MF6487

ANACARDIACEAE

Rhus aromatica Aiton var. *pilosissima* (Engelm.) Shinnery, Fragrant sumac, 2; w,m; C. FM17521

Rhus aromatica Aiton var. *serotina* (Greene) Rehder, Fragrant sumac, 3; w,m; O,D,C. F16875, FM17662, MF5950, MF6277

Rhus aromatica Aiton var. *trilobata* (Nutt.) A. Gray, Fragrant sumac, 1; m; D. MF6137

Rhus glabra L., Smooth sumac, 3; w,s,m; O,D,C. FM17590, L2001-23, MF5945, MF6136, MF6278

Toxicodendron radicans (L.) Kuntze subsp.

negundo (Greene) Gillis, Poison-ivy, 3; w,s,m; O,D,C. F16899, FM17769, MF6397

Toxicodendron rydbergii (Small ex Rydb.) Greene, Rydberg's poison-ivy, Western poison-ivy, 1; w,s; O. FM17663

APIACEAE

Ammoselinum popei Torr. & A. Gray, Plains sand-parsley, 4; m; D,C. F16863, F16901, F16921, MF6258

Cymopterus macrorhizus Buckley, Big-root spring-parsley, 2; m; D,C. F16850, F16930, F16945

Lomatium foeniculaceum (Nutt.) J.M. Coult. & Rose var. *daucifolium* (Nutt.) Cronquist, Fennel-leaf desert-parsley, 2; m; D,C. F16849, F16951

Sanicula canadensis L. var. *canadensis*, Canadian sanicle, 3; w; D,C. FM17869, MF5934, MF6366

Spermolepis inermis (Nutt. ex DC.) Mathias & Constance, Spreading scaleseed, Western scaleseed, 2; s; O,D. MF6004, MF6124, MF6473

**Torilis arvensis* (Huds.) Link, Field hedge-parsley, 2; w,u; D,C. MF6352, MF6364

APOCYNACEAE

Apocynum cannabinum L., Hemp dogbane, Prairie dogbane, 3; m,p; O,D,C. FM17735, MF5955, MF6133, MF6275

ASCLEPIADACEAE

Asclepias asperula (Decne.) Woodson subsp. *capricornu* (Woodson) Woodson, Antelope-horn milkweed, 3; s,m; O,D,C. [*A. asperula* (Decne.) Woodson var. *decumbens* (Nutt.) Shinnars – A, F] MF6050, MF6103, MF6222

Asclepias engelmanniana Woodson, Engelmann's milkweed, 3; s,m; O,D,C. FM17541, FM17666, FM17779, FM18396, FM18483, FM18484, MF6140, MF6412

Asclepias latifolia (Torr.) Raf., Broad-leaf milkweed, 3; s,m; O,D. FM17906, FM18321

Asclepias stenophylla A. Gray, Narrow-leaf milkweed, 1; s; O. MF6066

Asclepias tuberosa L. subsp. *interior* Woodson, Butterfly milkweed, 2; s; O. MF6008, MF6441

Asclepias viridiflora Raf., Green milkweed, 3; s,m; O,D,C. FM17593, FM17702, FM17907, MF6002, MF6144, MF6285, MF6449

Asclepias viridis Walter, Spider milkweed, 1; s; O. FM17672

ASTERACEAE

Ambrosia psilostachya DC., Western ragweed, 4; s,m; O,D,C. FM17604, FM17775, FM17873, FM18264, FM18299, FM18393

Ambrosia trifida L., Giant ragweed, 1; w,u; O,C. FM18325, FM18472

Amphiachyris dracunculoides (DC.) Nutt., Common broomweed, 5; s,m; O,D,C. [*Gutierrezia dracunculoides* (DC.) S.F. Blake – A, F] FM17904, FM17934, FM18263, FM18309, FM18409

Aphanostephus skirrhobasis (DC.) Trel. var. *skirrhobasis*, Parasol lazy-daisy, 2; s; O. MF6026, MF6439

Artemisia campestris L. subsp. *caudata* (Michx.) H.M. Hall & Clem., Western sagewort, 2; s,m; O. FM18307

Artemisia dracunculus L., Silky wormwort, Tarragon, 2; m; D. FM18395, FM18420, L2001-118

Artemisia filifolia Torr., Sand sagewort, 5; s,m; O,D,C. FM17626, FM17836, FM18340, FM18475

Artemisia ludoviciana Nutt. var. *ludoviciana*, Louisiana sagewort, 4; s,m; O,D,C. FM 17522, FM17899, FM17926, FM18265, FM18394, FM18459

Aster ericoides L. subsp. *ericoides* var. *ericoides*, Heath aster, White aster, 3; s,m; O,D,C. FM18266, FM18268, FM18305, FM18408

Aster falcatus Lindl. subsp. *commutatus* (Torr. & A. Gray) A.G. Jones, Western heath aster, 3; m,p; O,D,C. FM18362, FM18416, FM18457

Aster fendleri A. Gray, Fendler's aster, 3; m; D,C. FM18267, FM18407, FM18417, L2001-16

Aster oblongifolius Nutt., Aromatic aster, 2; s,m; O,D. FM18306b, FM18363, FM18418

Aster patens Aiton var. *patentissimus* (Lindl. ex DC.) Torr. & A. Gray, Sky-drop aster, 2; s; O. FM17576, FM18306a

Aster subulatus Michx. var. *ligulatus* Shinnars, Saltmarsh aster, 4; p,r,l; O,D,C. FM17767, FM18361, FM18428, FM18449

Baccharis salicina Torr. & A. Gray, Willow baccharis, 3; p,r,l; O,D,C. FM17639, FM17721, FM17761, FM17841, FM17868

Berlandiera betonicifolia (Hook.) Small, Betony-leaf berlandiera, 2; s; O. [*B. texana* DC. – A, F] MF6077, MF6431

Bidens bipinnatus L., Spanish needles, 1; w; O. FM17679

- Bidens comosus* (A. Gray) Wiegand, Leafy-bract beggar-ticks, 1; l; C. FM18436
- Bidens frondosus* L., Devil's beggar-ticks, 2; w; l; C. FM18329, FM18435
- Brickellia eupatorioides* (L.) Shinnery var. *corymbulosa* (Torr. & A. Gray) Shinnery, Eastern brickellbush, 2; s, m; O, C. [*Kuhnia eupatorioides* L. var. *corymbulosa* Torr. & A. Gray – A, F] FM18303
- Chaetopappa ericoides* (Torr.) G. Nesom, Heath least daisy, 3; m; D, C. [*Leucelene ericoides* (Torr.) Greene – A, F] F16826, F16866, MF6148, MF6242
- Cirsium ochrocentrum* A. Gray, Yellow-spine thistle, 3; m; D, C. FM17851, MF6338, MF6360
- Cirsium undulatum* (Nutt.) Spreng., Wavy-leaf thistle, 3; s, m; O, D, C. FM17562, FM17667, FM17837
- Conyza canadensis* (L.) Cronquist, Tall horseweed, Canadian horseweed, 3; s, u; O, D, C. FM17581, FM17939, FM18424
- Croptilon hookerianum* (Torr. & A. Gray) House var. *validum* (Rydb.) E. B. Sm., Slender goldenweed, 4; s, m; O. [*Haplopappus validus* (Rydb.) Cory – A, F] FM17599, FM17713, FM17920, FM18355
- Cyclachaena xanthifolia* (Nutt.) Fresen., Rag sumpweed, Bur-weed marshelder, 1; w, u; O. [*Iva xanthifolia* Nutt. – A, F] FM18323
- Dyssodia papposa* (Vent.) Hitchc., Prairie fetid-marigold, 2; m, u; D, C. FM17938, FM18385
- Echinacea angustifolia* DC. var. *angustifolia*, Narrow-leaf coneflower, 2; m, s; O, C. FM17528, FM17611, MF6065
- Eclipta prostrata* (L.) L., Yerba de tajo, 2; r; l; O, D, C. FM17588, FM17754, FM18439
- Engelmannia peristenia* (Nutt. ex Rydb.) Goodman & C. A. Lawson, Engelmann daisy, 3; m, s; O, D, C. [*E. pinnatifida* Nutt. – A, F] FM17664, MF6149, MF6272
- Erigeron modestus* A. Gray, Plains fleabane, 2; m; D, C. F16875, F16932, FM18399, MF6131, MF6316, MF6346
- Erigeron strigosus* Muhl. ex Willd., Daisy fleabane, 3; m, s; O, D, C. MF6068, MF6130, MF6302
- Eupatorium perfoliatum* L., Claspingleaf joe-pye-weed, Boneset, 2; p, r; O. FM17719, FM18328
- Euthamia gymnospermoides* Greene, Sticky euthamia, 1; r; O. [*Solidago graminifolia* (L.) Salisb. var. *gymnospermoides* (Greene) Croat – A; *S. graminifolia* (L.) Salisb. var. *media* (Greene) S. K. Harris – A] FM18349
- Evax prolifera* Nutt. ex DC., Big-head rabbit-tobacco, 2; m, s; O, D, C. F16898, FM17755, MF6238, MF6354, MF6470
- Gaillardia pulchella* Foug. var. *pulchella*, Indian blanket-flower, Rose-ring blanket-flower, 3; m; O, D, C. MF6027, MF6094, MF6212
- Gaillardia suavis* (A. Gray & Engelm.) Britton & Rusby, Rayless blanket-flower, 2; m; D, C. MF6127, MF6232
- Grindelia squarrosa* (Pursh) Dunal var. *nuda* (A. W. Wood) A. Gray, Curly-top gumweed, 3; s, m, u; O, D, C. FM17921, FM18271, FM18312
- Gutierrezia sarothrae* (Pursh) Britton & Rusby, Broom snakeweed, 4; s, m; O, D, C. FM17894, FM18274, FM18301, FM18405, L2001-20
- Helianthus annuus* L., Common sunflower, 2; u; O, D, C. FM17693, FM17772, FM18380, FM18482, L2001-101
- Helianthus maximilianii* Schrad., Maximilian's sunflower, 1; w; C. Ts. n.
- Helianthus petiolaris* Nutt. subsp. *petiolaris*, Plains sunflower, 2; s, m; O, C. FM17586, FM18308, L2001-79, MF6028
- Helianthus tuberosus* L., Jerusalem-artichoke sunflower, 1; p; O, C. L2001-56
- Heterotheca latifolia* Buckley var. *macgregoris* B. Wagenkn., Broad-leaf golden-aster, 3; s, m; O, D, C. FM17606, FM17918, FM18304, L2001-76
- Heterotheca stenophylla* (A. Gray) Shinnery var. *angustifolia* (Rydb.) Semple, Narrow-leaf golden-aster, 3; m; O, D, C. [*Chrysopsis villosa* (Pursh) Nutt. ex DC. var. *angustifolia* (Rydb.) Cronquist – A, F] FM17530, FM17807, FM18310
- Heterotheca stenophylla* (A. Gray) Shinnery var. *stenophylla*, Narrow-leaf golden-aster, 2; s, m; O, D. [*Chrysopsis stenophylla* (A. Gray) Shinnery – A, F] FM17838, FM17919, MF6486
- Hymenopappus tenuifolius* Pursh, Chalk-hill woolly-white, 3; s, m; O, D, C. FM17629, FM17898, MF6011, MF6122, MF6206, MF6419, MF6442
- Lactuca ludoviciana* (Nutt.) Ridd., Western lettuce, Louisiana lettuce, 1; w; C. MF6378
- **Lactuca serriola* L., Prickly lettuce, 2; u; O, D. FM17632, FM17791, FM17796
- Liatris punctata* Hook., Western dotted

- gayfeather, 4; s, m; O, D, C. FM17893, FM18275, FM18311, FM18411, L2001-14
- Liatris squarrosa* (L.) Michx. var. *glabrata* (Rydb.) F.C. Gates, Plains gayfeather, 2; s; O. [*L. glabrata* Rydb. – A] FM17580
- Lindheimera texana* A. Gray & Engelm., Texas-star, 1; m; C. MF6314
- Lygodesmia juncea* (Pursh) D. Don ex Hook., Rush skeleton-weed, 3; m; C. FM18270, FM18481, MF6292
- Machaeranthera pinnatifida* (Hook.) Shinnery var. *glaberrima* (Rydb.) B.L. Turner & R.L. Hartm., Cut-leaf tansy-aster, 4; s, m; O, D, C. [*Haplopappus spinulosus* (Pursh) DC. subsp. *glaberrimus* (Rydb.) H.M. Hall – F] FM17834, MF6071, MF6090, MF6234
- Machaeranthera pinnatifida* (Hook.) Shinnery var. *pinnatifida*, Cut-leaf tansy-aster, 2; m; D, C. [*Haplopappus spinulosus* (Pursh) DC. subsp. *australis* (Greene) H.M. Hall – F; *H. spinulosus* (Pursh) DC. subsp. *cotula* (Small) H.M. Hall – F; *H. spinulosus* (Pursh) DC. subsp. *spinulosus* – A, F] MF6085, MF6207
- Melampodium leucanthum* Torr. & A. Gray, Plains blackfoot, 3; m; D, C. F16949, FM18270, FM18392, MF6099, MF6260, MF6409
- **Onopordum acanthium* L., Scotch thistle, 1; w, u; D, C. MF6330
- Packera plattensis* (Nutt.) W.A. Weber & Á. Löve, Prairie ragwort, 3; m; O, D, C. [*Senecio plattensis* Nutt. – A, F] F16845
- Plectocephalus americanus* (Nutt.) D. Don, American knapweed, Basket-flower, 3; m; D, C. [*Centaurea americana* Nutt. – A, F] FM17553, FM17849, FM17936, MF6146, MF6291
- Pluchea odorata* (L.) Cass., Purple marsh-fleabane, 4; r, l; O, D, C. [*P. purpurascens* (Sw.) DC. – A] FM17638, FM17876, FM18365, FM18448, L2001-29
- Prionopsis ciliata* (Nutt.) Nutt., Wax-goldenweed, 4; s; O, C. [*Haplopappus ciliatus* (Nutt.) DC. – A, F] FM17718, FM18272, FM18298
- Pseudognaphalium obtusifolium* (L.) Hilliard & B.L. Burtt, Fragrant false-cudweed, 1; u; O. [*Gnaphalium obtusifolium* L. – A, F] FM18343
- Psilostrophe tagetina* (Nutt.) Greene var. *cerifera* (A. Nelson) B.L. Turner, Marigold paper-flower, 1; m; C. [*P. villosa* Rydb. – A, F] MF6337
- Pyrrophappus grandiflorus* (Nutt.) Nutt., Tuberous false-dandelion, 2; s, m; O, D, C. F16848, MF6037, MF6107, MF6195
- Ratibida columnifera* (Nutt.) Wootton & Standl., Upright prairie-coneflower, 2; s, m; O, D, C. MF6036, MF6125, MF6263
- Senecio riddellii* Torr. & A. Gray, Riddell's groundsel, 3; s, m; O, D. FM18302, FM18415
- Solidago altiplanities* C.E.S. Taylor & R.J. Taylor, High-plains goldenrod, 3; m; O, D, C. FM17557, FM18273, FM18300, FM18403, FM18419
- Solidago canadensis* L. var. *scabra* (Muhl. ex Willd.) Torr. & A. Gray, Canadian goldenrod, 2; w, p, r; O, C. FM17734, FM18327, FM18446
- Solidago gigantea* Aiton, Late goldenrod, November goldenrod, 1; w, p, r; O. FM18346
- Solidago missouriensis* Nutt., Missouri goldenrod, Prairie goldenrod, 2; s, m; O, C. FM17709, FM17877, FM18462, Ts.n.
- Solidago petiolaris* Aiton var. *petiolaris*, Downy goldenrod, 1; s, m; O, D. FM18372, FM18402
- **Sonchus asper* (L.) Hill, Prickly sow-thistle, 2; u; O, C. MF5974, MF6297
- **Taraxacum laevigatum* (Willd.) DC., Red-seed dandelion, 2; m, u; O, C. F16913, MF6283
- Tetraneuris scaposa* (DC.) Greene var. *scaposa*, Naked-stem tetraeuris, 4; m; D, C. [*Hymenoxys scaposa* (DC.) K.L. Parker var. *glabra* (Nutt.) K.L. Parker – A, F; *H. scaposa* (DC.) K.L. Parker var. *scaposa* – A, F] F16825, F16876, F16952, MF6231, MF6418, MF6490
- Thelesperma filifolium* (Hook.) A. Gray var. *intermedium* (Rydb.) Shinnery, Thread-leaf greenthread, 1; m; D. MF6120
- Thelesperma megapotamicum* (Spreng.) Kuntze, Rio Grande greenthread, 4; s, m; O, D, C. FM17835, MF6074, MF6139, MF6233, MF6417
- **Tragopogon dubius* Scop., Western salsify, 2; m, u; O, C. MF6080, MF6267
- Verbesina encelioides* (Cav.) Benth. & Hook. f. ex A. Gray subsp. *encelioides*, Golden crownbeard, 1; w, u; O. FM18324
- Verbesina encelioides* (Cav.) Benth. & Hook. f. ex A. Gray subsp. *exauriculata* (B.L. Rob. & Greenm.) J.R. Coleman, Golden crownbeard, 2; u; D. FM18386
- Vernonia baldwinii* Torr. subsp. *interior* (Small) W.Z. Faust, Western ironweed, 3; s, m; O, D, C. FM17547, FM17585, FM17762, FM17888, FM18421

Xanthisma texanum DC. subsp. *drummondii* (Torr. & A. Gray) Semple, Sleepy daisy, 4; s,m; O,D,C. [*X. texanum* DC. var. *drummondii* (Torr. & A. Gray) A. Gray – A] FM17615, FM17917, FM18313, MF6044, MF6350, MF6451

Xanthium strumarium L., Common cocklebur, 3; l; O,D,C. FM17803, FM18276, FM18377

Zinnia grandiflora Nutt., Rocky Mountain zinnia, 2; m; D,C. MF6095, MF6336, MF6408

BIGNONICACEAE

**Campsis radicans* (L.) Seem., Common trumpet-creeper, Trumpetvine, 1; w,u; O. FM18335

**Catalpa speciosa* Warder, Northern catalpa, Catawba-tree, 2; w,u; O. FM18336, MF5986

BORAGINACEAE

Lappula redowskii (Hornem.) Greene, Flat-spine stickseed, 3; s,m; O,D,C. F16853, F16922, MF5940, MF6293

Lappula texana (Scheele) Britton, Cup-seed stickseed, 2; s,m; D,C. F16927, F16940

Lithospermum caroliniense (Walter ex J.F. Gmel.) MacMill., Carolina gromwell, Carolina puccoon, 1; s; O. MF6069

Lithospermum incisum Lehm., Plains gromwell, 3; s,m; O,D,C. F16878, F16944, MF6003, MF6154, MF6254, MF6469

BRASSICACEAE

**Camelina microcarpa* Andr. ex DC., Little-pod false-flax, 1; u; C. MF6294, MF6494

**Capsella bursa-pastoris* (L.) Medik., Common shepherd's-purse, 2; u; O,D,C. F16838

Descurainia pinnata (Walter) Britton subsp. *halictorum* (Cockerell) Detling, Pinnate tansy-mustard, 2; m,u; O,C. F16880

Dimorphocarpa candicans (Raf.) Rollins, Palmer's spectacle-pod, 1; s; O. [*D. palmeri* (Payson) Rollins – F; *Dithyrea wislizenii* Engelm. var. *palmeri* Payson – A] FM17654, MF6424

Draba reptans (Lam.) Fernald, White whitlow-wort, 2; m; O,D,C. F16832

Erysimum asperum (Nutt.) DC., Plains wallflower, 1; m; C. F16948

Lepidium densiflorum Schrad., Prairie pepper-grass, 2; m,u; O,D. F16835, MF6006

Lepidium oblongum Small, Oblong pepper-grass, 2; m,u; D,C. F16836, MF6257

**Nasturtium officinale* R.Br., Common watercress, 1; r; O. F16892, MF5970

Physaria gordonii (A. Gray) O'Kane & Al-Shehbaz,

Gordon's bladderpod, 4; m; D,C. [*Lesquerella gordonii* (A. Gray) S. Watson – A, F] F16856, MF6255

Physaria ovalifolia (Rydb.) O'Kane & Al-Shehbaz subsp. *ovalifolia*, Oval-leaf bladderpod, 4; m; O,D,C. [*Lesquerella ovalifolia* Rydb. subsp. *ovalifolia* – A, F] F16847, F16950, MF6404, MF6488

CACTACEAE

Coryphantha vivipara (Nutt.) Britton & Rose var. *vivipara*, Pin-cushion coryphantha, 2; s,m; O,D,C. FM18322, MF6118, MF6331, MF6361

Cylindropuntia imbricata (Haw.) F.M. Knuth var. *imbricata*, Tree cholla, 1; m; C. [*Opuntia imbricata* (Haw.) DC. var. *imbricata* – A, F] FM18485

Echinocereus reichenbachii (Terscheck ex Walp.) F. Haage var. *reichenbachii*, Lace hedgehog cactus, 2; m; D,C. FM17559, MF6192, MF6413

Opuntia macrorhiza Engelm. var. *macrorhiza*, Big-root pricklypear, 3; s,m; O,D,C. FM17560, MF6056, MF6332, MF6362, MF6436

Opuntia phaeacantha Engelm. var. *major* Engelm., New Mexico pricklypear, 1; m; D. FM17852

CAMPANULACEAE

Lobelia cardinalis L., Cardinal-flower, 1; p; O. L2001-61

Triodanis holzingeri McVaugh, Holzinger's Venus'-looking-glass, 2; s; O. MF6046, MF6446

Triodanis leptocarpa (Nutt.) Nieuwl., Slender-fruit Venus'-looking-glass, 3; m; D,C. MF6119, MF6235

CAPPARACEAE

Polanisia dodecandra (L.) DC. subsp. *trachysperma* (Torr. & A. Gray) H.H. Iltis, Rough-seed clammyweed, 2; s,m; D,C. MF6298, MF6407

Polanisia jamesii (Torr. & A. Gray) H.H. Iltis, James' clammyweed, *Cristatella*, 2; s,m; O. [*Cristatella jamesii* Torr. & A. Gray – A] FM17653, FM18282, MF6073, MF6189

CARYOPHYLLACEAE

Loeflingia squarrosa Nutt. subsp. *texana* (Hook.) Barneby & Twisselm., Spreading loeflingia, 1; s; O. MF6062

Paronychia jamesii Torr. & A. Gray, James' nailwort, 4; s,m; O,D,C. FM17525, FM17597, MF6030, MF6110, MF6268, MF6478

Silene antirrhina L., Sleepy catchfly, 3; s,m; O,D,C. F16829, MF6033, MF6161, MF6305, MF6447
 **Stellaria pallida* (Dumort.) Crép., Pale chickweed, 1; u; C. F16911

CELASTRACEAE

Celastrus scandens L., American bittersweet, 1; w; C. MF6379

CHENOPODIACEAE

Chenopodium berlandieri Moq. var. *zschackii* (Murray) Murray ex Asch., Pit-seed goosefoot, 3; m,u; O,D. FM17904, FM17931, FM18341, FM18382

**Chenopodium glaucum* L., Oak-leaf goosefoot, 1; l; C. FM18444

Chenopodium missouriense Aellen, Missouri goosefoot, 1; u; C. FM18466

Chenopodium pratericola Rydb., Field goosefoot, 3; s,m; O,D. FM17578, FM17658, FM17776, MF6015, MF6428

Chenopodium simplex (Torr.) Raf., Maple-leaf goosefoot, 2; w; O. [*C. gigantospermum* Aellen – F; *C. hybridum* L. – A] FM17728, FM18332

Chenopodium standleyanum Aellen, Standley's goosefoot, 3; w; O,D,C. FM17682, FM17727, FM17817, FM18333, FM18412, FM18474

Cycloloma atriplicifolium (Spreng.) J.M. Coult., Tumble ringwing, 2; s; O. FM17616, FM18350, MF6013

**Kochia scoparia* (L.) Schrad., Broom kochia, 1; u; C. FM18465

Monolepis nuttalliana (Schult.) Greene, Nuttall's poverty-weed, 3; m,u; D,C. F16908, F16938, MF6200

**Salsola tragus* L., Common Russian-thistle, 3; u; O,D,C. [*S. iberica* Sennen & Pau – A, F] FM17842, FM17940, FM18373

CISTACEAE

Lechea tenuifolia Michx., Narrow-leaf pinweed, 2; s; O. FM17592, FM18315, MF6064

COMMELINACEAE

Commelina erecta L. var. *angustifolia* (Michx.) Fernald, Erect dayflower, 3; s; O. MF5990, MF6024, MF6482

Tradescantia occidentalis (Britton) Smyth & L. Smyth var. *occidentalis*, Western spiderwort, Prairie spiderwort, 3; s,m; O,D,C. MF6029, MF6176, MF6230, MF6444

CONVOLVULACEAE

Convolvulus equitans Benth., Gray bindweed, 1; m; C. MF6199

Evolvulus nuttallianus Schult., Nuttall's evolvulus, 2; m; D,C. FM17529, MF6045, MF6108, MF6199, MF6228

Ipomoea leptophylla Torr., Bush morning-glory, 1; s,m; D. MF6414

CORNACEAE

Cornus drummondii C.A. Mey., Rough-leaf dogwood, 4; w,m; O,D,C. FM17519, FM17661, FM17814, MF5949, MF6123, MF6318

CUCURBITACEAE

Cucurbita foetidissima Kunth, Buffalo gourd, 3; s,m; O,D,C. MF6327, MF6420, MF6461

CUSCUTACEAE

Cuscuta cuspidata Engelm., Cusp dodder, 2; s,m; O,D,C. FM17656, FM18319, L2001-36, L2001-77

CYPERACEAE

Carex austrina Mack., Southern sedge, 2; w,s; O,C. MF6082, MF6395

Carex bulbostylis Mack., Thick-style sedge, 2; w; O,C. [*C. amphibola* Steud. var. *globosa* (L.H. Bailey) L.H. Bailey – Taylor and Taylor (1994)] MF5997, MF6370

Carex gravida L.H. Bailey, Heavy sedge, 3; w,l; O,D,C. F16870, F16887, F16914, MF5943, MF6224, MF6300, MF6358, MF6359, MF6375

Carex pellita Muhl. ex Willd., Woolly sedge, 1; p,r,l; C. [*C. lanuginosa* Michx. – A, F] FM18463

Cyperus acuminatus Torr. & Hook., Tape-leaf flat-sedge, 1; l; O. FM17646

Cyperus lupulinus (Spreng.) Marcks subsp. *lupulinus*, Slender-stem flat-sedge, 2; s,m; O. FM18364, MF5998

Cyperus xmesochorus Geise, Intermediate flat-sedge, 2; s,m; O. FM17647, MF5599

Cyperus odoratus L., Slender flat-sedge, Rusty flat-sedge, 3; l; O,D,C. FM17640, FM17748, FM17933, F18379, FM18437

Cyperus schweinitzii Torr., Schweinitz's flat-sedge, 2; s,m; O. MF6025, MF6443

Eleocharis coloradoensis (Britton) Gilly, Colorado spike-rush, 4; l; D,C. FM17739, FM17843, FM17855, FM18456

Eleocharis erythropoda Steud., Bald spike-rush, 2; l; O,C. FM17579, FM17859

Eleocharis geniculata (L.) Roem. & Schult., Cluster spike-rush, 1; l; C. [*E. caribaea* (Rottb.) S.F. Blake – A, F] FM17879

Eleocharis macrostachya Britton, Large-spike spike-rush, 4; l; O, D, C. [*E. xyridiformis* Fernald & Brackett – A, F] FM17650, MF6153, MF6357

Eleocharis montevidensis Kunth, Sand spike-rush, 4; p, r, l; O, D, C. FM17717, FM17740, FM17858, MF5971, MF6152, MF6373

Eleocharis palustris (L.) Roem. & Schult., Marsh spike-rush, 1; l; D. [*E. smallii* Britton – A, F] FM17741

Eleocharis rostellata (Torr.) Torr., Beaked spike-rush, 2; p, l; O, C. FM17732, FM17861

Fuirena simplex Vahl var. *aristulata* (Torr.) Kral, Western umbrella-grass, 2; p, r, l; O, D, C. FM17678, FM17759, FM17856

Schoenoplectus pungens (Vahl) Palla var. *longispicatus* (Britton) S.G. Sm., Common threesquare twine-bulrush, 4; p, r, l; O, D, C. [*Scirpus americanus* Pers. – misapplied in A and in Taylor and Taylor (1994); *S. pungens* Vahl – F] FM17716, FM17863, MF5987

EBENACEAE

Diospyros virginiana L., Virginia persimmon, 2; w, p; O, C. FM17725, FM17890

ELATINACEAE

Bergia texana (Hook.) Seub. ex Walp., Texas bergia, 2; l; D, C. FM17800, FM17822

EUPHORBIACEAE

Acalypha ostryifolia Riddell, Rough-pod copperleaf, 1; u; O. FM18330

Chamaesyce fendleri (Torr. & Gray) Small, Fendler's mat-spurge, 4; m; O, D, C. [*Euphorbia fendleri* Torr. & A. Gray – A, F] F16931, FM17552, FM17591, FM17808, MF6098, MF6259

Chamaesyce geyeri (Engelm.) Small, Geyer's mat-spurge, 1; s; O. [*Euphorbia geyeri* Engelm. – A, F] FM18356

Chamaesyce glyptosperma (Engelm.) Small, Ridge-seed mat-spurge, 4; s, m; O, D, C. [*Euphorbia glyptosperma* Engelm. – A, F] FM17613, FM17902, FM17941a, FM18280, MF5979, MF6177, MF6299

Chamaesyce maculata (L.) Small, Spotted mat-spurge, 3; l, u; O, D. [*Euphorbia maculata* L. – A, F] FM17621, FM17747, MF5991

Chamaesyce missurica (Raf.) Shinnery, Missouri

mat-spurge, 2; s, m; D, C. [*Euphorbia missurica* Raf. – A, F] FM17825, MF6402

Chamaesyce nutans (Lag.) Small, Eyebane, Nodding mat-spurge, 1; u; O. [*Euphorbia nutans* Lag. – A, F] FM18357

Chamaesyce prostrata (Aiton) Small, Prostrate mat-spurge, 1; u; C. [*Euphorbia prostrata* Aiton – A, F] FM17941b, MF6491

Chamaesyce serpens (Kunth) Small, Round-leaf mat-spurge, 1; l; C. [*Euphorbia serpens* Kunth – A, F] FM17823

Croton glandulosus L. var. *lindheimeri* Müll. Arg., Tropic croton, 2; s, m; O. FM17589, FM18283, MF6433

Croton monanthogynus Michx., One-seed croton, 3; m, s, u; D, C. FM17774, FM17827, FM17896, MF6167

Croton texensis (Klotzsch) Müll. Arg., Texas croton, 3; s, m; O, D, C. FM17538, FM17778, MF6022, MF6168, MF6307

Euphorbia davidii Subils, Western toothed spurge, 3; s, m, u; O, D, C. FM17780, FM17912

Euphorbia longicuris Scheele, Wedge-leaf spurge, 2; m; D, C. F16859, MF6106B, MF6296

Euphorbia marginata Pursh, Snow-on-the-mountain, 3; m; D, C. FM17546, FM17847, FM18279, FM18477

Euphorbia spathulata Lam., Warty spurge, 2; s, m; D, C. MF6106A, MF6236

Stillingia sylvatica L. subsp. *sylvatica*, Queen's-delight stillingia, 2; s; O. FM17655, MF6076

Tragia betonicifolia Nutt., Betony noseburn, 2; s; O. FM17642, FM17651, MF6047

Tragia ramosa Torr., Catnip noseburn, 3; m; D, C. F16855, FM18410, MF6173, MF6229, MF6405, MF6489

FABACEAE

Acacia angustissima (Mill.) Kuntze var. *hirta* (Nutt.) B.L. Rob., Prairie acacia, 3; s, m; O, D, C. FM17703, FM17923, MF6290, MF6348, MF6471

Amorpha canescens Pursh, Leadplant, 1; s, m; O. FM17610

Amorpha fruticosa L., Bush wild-indigo, 2; m, l; D, C. FM17840, FM17865, MF6317

Astragalus crassicaarpus Nutt. var. *crassicaarpus*, Ground-plum milk-vetch, 2; m; O, D. F16864, MF6081

Astragalus gracilis Nutt., Slender milk-vetch, 2; m; D, C. F16861, MF6092, MF6269

- Astragalus lotiflorus* Hook., Lotus milk-vetch, 2; m; D,C. F16827, MF6223, MF6343
- Astragalus missouriensis* Nutt. var. *missouriensis*, Missouri milk-vetch, 2; m; D. F16857, MF6250
- Astragalus mollissimus* Torr. var. *mollissimus*, Woolly milk-vetch, 2; m; D,C. F16822, MF6247, MF6349
- Astragalus nuttallianus* DC. var. *austrinus* (Small) Barneby, Small-flower milk-vetch, 1; m; D,C. F16828, F16937
- Astragalus plattensis* Nutt., Platte River milk-vetch, 2; s,m; O. F16886, MF6055
- Baptisia australis* (L.) R. Br. var. *minor* (Lehm.) Fernald, Blue wild-indigo, 3; s,m; O,D,C. F16868, F16954, FM17624, MF6191, MF6274
- Baptisia bracteata* Muhl. ex Elliott var. *leucophaea* (Nutt.) Kartesz & Gandhi, Plains wild-indigo, 4; s,m; O. [*B. bracteata* Muhl. ex Elliott var. *glabrescens* (Larisey) Isley – F; *B. leucophaea* Nutt. – A] F16719, FM17625, MF6075
- Chamaecrista fasciculata* (Michx.) Greene, Showy partridgepea, 3; s,m; O. [*Cassia chamaecrista* L. – F; *Cassia fasciculata* Michx. – A] FM17587, FM17910, FM18317
- Dalea aurea* Nutt. ex Pursh, Golden prairie-clover, 3; m; O,D,C. FM17536, FM17752, FM17805
- Dalea candida* Michx. var. *oligophylla* (Torr.) Shinnery, Western prairie-clover, 4; s,m; O,D,C. FM17567, FM17708, FM17832, MF6499
- Dalea enneandra* Nutt., Nine-anther prairie-clover, 4; s,m; O,D,C. FM17535, FM17601, FM17712, FM17751, FM17806, MF6287, MF6353
- Dalea purpurea* Vent. var. *arenicola* (Wemple) Barneby, Purple prairie-clover, 1; s; O. MF6007, MF6445
- Dalea purpurea* Vent. var. *purpurea*, Purple prairie-clover, 3; s,m; O,D,C. FM17537, FM17668, MF6116, MF6288, MF6398, MF6498
- Dalea villosa* (Nutt.) Spreng. var. *villosa*, Silky prairie-clover, 1; s; O. FM17634
- Desmanthus illinoensis* (Michx.) MacMill. ex B.L. Rob. & Fernald, Illinois bundle-flower, 2; s,m; O,D,C. FM17524, FM17665, FM17768, FM17874
- Desmodium illinoense* A. Gray, Illinois tick-clover, 2; w,s; O. FM17695, MF6051, MF6448
- Desmodium sessilifolium* (Torr.) Torr. & A. Gray, Sessile-leaf tick-clover, 2; s; O. FM17600, FM17925
- Gleditsia triacanthos* L., Common honey-locust, 1; w; O. MF6000
- Glycyrrhiza lepidota* Pursh, American licorice, 3; m,r,l; O. FM17608, MF5975
- Gymnocladus dioica* (L.) K. Koch, Kentucky coffeetree, 2; w,m; C. F16916, FM17819, MF6384
- Hedysarum boreale* Nutt., Northern sweet-vetch, 1; m; C. FM17540
- Indigofera miniata* Ort., Western indigo, 3; s; O. [*I. miniata* Ort. var. *leptosepala* (Nutt.) B.L. Turner – A, F] FM17595, MF6010, MF6453
- Lespedeza capitata* Michx., Round-head bush-clover, 3; s; O. FM17711
- Lespedeza stuevei* Nutt., Tall bush-clover, Stueve's bush-clover 4; s; O. FM17584, FM18318
- **Medicago minima* (L.) L., Prickly medic, 3; m,u; D,C. F16841, F16910, MF6220, MF6344
- **Melilotus alba* Medik., White sweet-clover, 2; u; O,C. FM18348, MF6308
- **Melilotus officinalis* (L.) Pall., Yellow sweet-clover, 2; u; O,C. MF6205, MF6390, MF6427
- Mimosa borealis* A. Gray, Fragrant mimosa, 4; s,m; O,D. FM17704, L200-52, MF6086, MF6198
- Mimosa quadrivalvis* L. var. *nuttallii* (DC.) L.S. Beard ex Barneby, Cat-claw mimosa, 3; s,m; O,D,C. [*Schrankia nuttallii* (DC.) Standl. – A, F] FM17607, MF6128, MF6197, MF6454
- Oxytropis lambertii* Pursh var. *lambertii*, Lambert's locoweed, 2; m; O,D,C. F16862, FM17526
- Pediomelum cuspidatum* (Pursh) Rydb., Tall-bread scurfpea, 3; m; D,C. [*Psoralea cuspidata* Pursh – A, F] MF6104, MF6194
- Pediomelum digitatum* (Nutt.) Isely, Palm-leaf scurfpea, 2; s; O. [*Psoralea digitata* Nutt. var. *digitata* – A, F] FM17574, MF6054
- Pediomelum linearifolium* (Torr. & A. Gray) J.W. Grimes, Slim-leaf scurfpea, 3; s,m; O,D,C. [*Psoralea linearifolia* Torr. & A. Gray – A, F] FM17558, FM17833, MF6038, MF6084, MF6273
- Prosopis glandulosa* Torr. var. *glandulosa*, Honey mesquite, 1; m; O,D. FM17561, L2001-112
- Psoralidium tenuiflorum* (Pursh) Rydb., Narrow-leaf scurfpea, 3; s; O. [*Psoralea tenuiflora* Pursh var. *floribunda* (Nutt.) Rydb. – A, F; *P. tenuiflora* Pursh var. *tenuiflora* – A, F] FM17924, MF6023, MF6474
- Robinia pseudoacacia* L., Black locust, 3; w; O,D,C. F16897, FM18423, MF6313

Strophostyles leiosperma (Torr. & A. Gray) Piper,
Slick-seed wildbean, 2; s; O,D. FM17598,
FM17797, FM18316, MF6430

Stylosanthes biflora (L.) Britton et al., Two-flower
pencil-flower, 1; s; O. FM17572

Tephrosia virginiana (L.) Pers., Goat's-rue, 1; s; O.
MF6070

Vicia americana Muhl. ex Willd. var. *minor* Hook.,
American vetch, 2; m; D. F16874

FAGACEAE

Quercus havardii Rydb., Shinnery oak, 5; s,m; O,D.
F16896, F16955, F16956, FM17670, FM17916

Quercus havardii Rydb. × *Quercus stellata*
Wangenh., 3; s,m; O. FM17671, L2000-104,
L2000-105

Quercus macrocarpa Michx., bur oak, 1; w; O. Ts.n.

FUMARIACEAE

Corydalis aurea Willd. subsp. *occidentalis* (Engelm.
ex A. Gray) G.B. Ownbey, Golden fumewort,
1; m; O. F16879

GERANIACEAE

**Erodium cicutarium* (L.) L'Her. ex Aiton, Califor-
nia filaree, 2; u; D,C. F16837, MF6304

Geranium carolinianum L., Carolina crane's-bill, 2;
s,m,u; O,C. MF5937, MF6262

GROSSULARIACEAE

Ribes odoratum H. Wendl., Buffalo currant, 3; w,m;
O. F16891, MF5951

HYDROCHARITACEAE

Najas guadalupensis (Spreng.) Magnus subsp.
guadalupensis, Common naiad, 4; l; D,C.
FM17738, FM17853

IRIDACEAE

Sisyrinchium ensigerum E.P. Bicknell, Sword-leaf
blue-eyed-grass, 3; w,m; O,D,C. F16858,
F16946, MF6261, MF6347, MF6372

JUGLANDACEAE

**Carya illinoensis* (Wangenh.) K. Koch, Pecan,
1; u; O. L2001-106

Juglans microcarpa Berland., Texas walnut, Little
walnut, 4; w,m; O,D,C. FM17692, FM17765,
FM18433, FM18461, MF6138, MF6312,
MF6385

**Juglans nigra* L., Black walnut, 2; w; O. FM17691,
MF5985

JUNCACEAE

Juncus dudleyi Wiegand, Dudley's rush, 2; p,r; O.
FM17680, MF5976

Juncus torreyi Coville, Torrey's rush, 3; p,r,l; O,D,C.
FM17645, FM17731, FM17743, FM17875

KRAMERIACEAE

Krameria lanceolata Torr., Trailing ratany, Lance-
leaf ratany, 3; s,m; O,D,C. FM18374, MF6083,
MF6280, MF6351

LAMIACEAE

Hedeoma drummondii Benth., Drummond's
false-penny-royal, 3; m; D,C. FM17527,
FM17773, FM17892, MF6188

Hedeoma hispida Pursh, Rough false-penny-
royal, 3; m; O,D,C. F16918, MF6042, MF6111,
MF6256

**Lamium amplexicaule* L., Henbit dead-nettle, 1;
u; C. F16909

Lycopus americanus Muhl. ex W.P.C. Barton,
American water-horehound, 3; p,r,l; O,D,C.
FM17636, FM17726, FM17763, FM17889,
FM18360, L2001-30

Monarda citriodora Cerv. ex Lag., Lemon bee-
balm, 2; m; D,C. FM17932

Monarda clinopodioides A. Gray, Basil bee-balm,
3; m; D,C. MF6091, MF6225

Monarda pectinata Nutt., Plains bee-balm, 2; s; O.
MF6472

Monarda punctata L. var. *occidentalis* (Epling) E.J.
Palmer & Steyerl., Spotted bee-balm, 2; s; O.
MF6015, MF6440

Salvia azurea Michx. ex Lam., Blue sage, Pitcher's
sage, 3; m; O,D,C. [*S. pitcheri* Torr. – A] FM17792,
FM18278, FM18314, FM18397, FM18422

Scutellaria drummondii Benth. var. *edwardsiana*
B.L. Turner, Drummond's skullcap, 1; m; D.
MF6162

Scutellaria resinosa Torr., Resinous skullcap, 4; m;
O,D,C. F16947, MF6031, MF6098, MF6211,
MF6415

Teucrium canadense L. var. *canadense*, American
germander, 2; p,r,l; O,C. [*T. canadense* L. var.
virginicum (L.) Eaton – A] FM17685, FM17884,
FM18440

Teucrium laciniatum Torr., Cut-leaf germander, 1;
m; D. MF6399

LILIACEAE

Allium canadense L. var. *fraseri* Ownbey, Canadian
onion, 2; s,w; O,C. MF6005, MF6374

Allium drummondii Regel, Drummond's onion, 5; m; D. F16824, F16939

Nothoscordum bivalve (L.) Britton, Yellow false-garlic, 1; m; D. F16840

LINACEAE

Linum berlandieri Hook. var. *berlandieri*, Berlandier's flax, 2; m; O,C. [*L. rigidum* Pursh var. *berlandieri* (Hook.) Torr. & A. Gray – A, F] F16925, FM17565

Linum pratense (Norton) Small, Norton's blue flax, 4; m; D,C. F16831, F16926, MF6410, MF6500

Linum rigidum Pursh var. *rigidum*, Stiff-stem flax, 4; m; D,C. F16936, MF6143, MF6163

LOASACEAE

Mentzelia decapetala (Pursh) Urb. & Gilg., Ten-petal mentzelia, 1; m; D,C. FM17846

Mentzelia nuda (Pursh) Torr. & A. Gray, Bractless mentzelia, Sand-lily, 4; s,m; O,D,C. FM17543, FM17568, FM17705, FM17815, FM18480

Mentzelia oligosperma Nutt. ex Sims, Stick-leaf, Chickenthief, 1; m; D. MF6400

LYTHRACEAE

Ammannia coccinea Rottb., Purple toothcup, 3; l; D. FM17648, FM17801

Ammannia robusta Heer & Regel, Stout toothcup, 2; l; O,D,C. FM17746, FM17883

MALVACEAE

Callirhoë involucreta (Torr. & A. Gray) A. Gray var. *involucreta*, Winecup, 1; m; D. MF6134

Callirhoë involucreta (Torr. & A. Gray) A. Gray var. *lineariloba* (Torr. & A. Gray) A. Gray, Winecup, 2; m,p; O,C. FM17733, MF5994, MF6196

Sphaeralcea coccinea (Nutt.) Rydb. var. *coccinea*, Scarlet globe-mallow, 2; m; D,C. F16843, F16943, MF6284

MENISPERMACEAE

Cocculus carolinus (L.) DC., Carolina snailseed, 1; p; O. L2001-66

MOLLUGINACEAE

Mollugo verticillata L., Green carpetweed, 3; s,m,u; O,D,C. FM17652, FM17804, FM17826, MF6041

MORACEAE

**Maclura pomifera* (Raf.) C.K. Schneid., Osage-orange, Hedge-apple, 1; w,u; O [see Schambach (2000) for a discussion of the pre-European range of this species in Oklahoma]. FM18337

**Morus alba* L., White mulberry, 1; w; O. MF5953

Morus rubra L., Red mulberry, 1; w; C. FM17872, MF6383

NYCTAGINACEAE

Mirabilis glabra (S. Watson) Standl., Smooth four-o'clock, 2; s; O. FM17614, FM17633

Mirabilis linearis (Pursh) Heimerl var. *linearis*, Narrow-leaf four-o'clock, 3; m; O,D,C. FM17839, FM18464, L2001-09, MF6178, MF6301, MF6422, MF6481

OLEACEAE

Forestiera pubescens Nutt., Downy forestiera, 4; w,s; O,D,C. F16915, FM17628, FM17771, MF6380

ONAGRACEAE

Calylophus berlandieri Spach subsp. *berlandieri*, Berlandier's evening-primrose, 1; s; O. FM17659, MF6437, MF6438

Calylophus hartwegii (Benth.) P.H. Raven subsp. *pubescens* (A. Gray) Towner & P.H. Raven, Hartweg's evening-primrose, 3; m; D,C. F16904, F16941, MF6096, MF6202

Calylophus lavandulifolius (Torr. & A. Gray) P.H. Raven, Lavender-leaf evening-primrose, 1; m; D. MF6089

Calylophus serrulatus (Nutt.) P.H. Raven, Plains yellow evening-primrose, 4; s,m; O,D,C. FM17548, FM17850, MF6009, MF6072, MF6113, MF6201

Epilobium leptophyllum Raf., American marsh willowherb, Slender-fruit willowherb, 1; p,l; O. FM18359

Gaura coccinea Pursh, Scarlet butterfly-weed, 3; m; D,C. F16833, F16902, MF6239

Gaura parviflora Douglas, Velvet butterfly-weed, 3; s,m,u; O,D,C. FM17631, FM17753, FM17830, FM18371, FM18454, MF6185, MF6289

Gaura villosa Torr. subsp. *villosa*, Hairy butterfly-weed, 3; s,m; O. FM17594, FM18370, MF6017, MF6457

Oenothera laciniata Hill, Cut-leaf evening-primrose, 2; s,m; O. F16881, MF5948, MF6483

Oenothera macrocarpa Nutt. subsp. *incana* (A. Gray) W.L. Wagner, Gray evening-primrose, 3; m; D,C. F16854, FM17542, FM17897, MF6129, MF6411

Oenothera rhombipetala Nutt., Four-point evening-primrose, 1; s; O. FM17641

Oenothera triloba Nutt., Stemless evening-primrose, 1; m; C. F16928

Stenosiphon linifolius (Nutt.) Heynh.,
Stenosiphon, 4; s,m; D,C. FM17534, FM17750,
FM17812, FM17935, FM18281, FM18391,
MF6102

OXALIDACEAE

Oxalis dillenii Jacq. subsp. *dillenii*, Gray-green
wood-sorrel, 2; m,u; O,D,C. F16929, MF6053,
MF6345, FM18470

Oxalis violacea L., Violet wood-sorrel, 1; s,m; O,D.
F16917

PAPAVERACEAE

Argemone polyanthemos (Fedde) G.B. Ownbey,
Plains prickly-poppy, 2; m; O,D. FM18432,
MF6058

PEDALIACEAE

Proboscidea louisianica (Mill.) Thell., Common
devil's-claw, 1; l,u; D. FM17802

PHYTOLACCACEAE

Phytolacca americana L. var. *americana*, Ameri-
can pokeweed, 3; w,u; O,D. FM17736,
FM18414, MF5941

PLANTAGINACEAE

Plantago patagonica Jacq. var. *patagonica*,
Woolly plantain, 4; s,m; O,D,C. MF5959,
MF6016, MF6112, MF6209, MF6340

Plantago patagonica Jacq. var. *spinulosa* (Decne.)
A. Gray, Bristle-bract plantain, 3; s,m; O,D.
MF6079, MF6121, MF6339

Plantago rhodosperma Decne., Red-seed plan-
tain, 3; s,m,u; O,D,C. F16924, MF6052, MF6100,
MF6208, MF6389

POACEAE

**Aegilops cylindrica* Host, Jointed goat grass, 2;
u; D,C. MF6183, MF6245

**Agrostis gigantea* Roth, Spreading redtop, 1; r;
O. FM17681

Andropogon hallii Hack., Sand bluestem, 5; s,m;
O,D,C. FM17550, FM17784, FM17908,
FM17928, FM18293, FM18406, FM18458

Aristida basiramea Engelm. ex Vasey, Fork-tip
threeawn, 1; s; O. FM18291, FM18369

Aristida oligantha Michx., Old-field threeawn, 2;
s,m,u; O. FM17571, FM17644, FM18289,
FM18366

Aristida purpurascens Poir. var. *purpurascens*, Ar-
row-feather threeawn, 3; s,m; O. FM17700,
FM18290

Aristida purpurea Nutt. var. *longiseta* (Steud.)
Vasey, Purple threeawn, 1; m; D. [*A. longiseta*
Steud. – A; *A. purpurea* Nutt. var. *robusta*
(Merr.) A.H. Holmgren & N.H. Holmgren – F]
MF6114

Aristida purpurea Nutt. var. *purpurea*, Purple
threeawn, 3; s,m; O,D,C. [*A. roemeriana*
Scheele – A, F] FM17701, FM17848, MF6049,
MF6213, MF6403, MF6477

Aristida purpurea Nutt. var. *wrightii* (Nash) Allred,
Purple threeawn, 5; m; O,D,C. [*A. wrightii* Nash
– A] FM17533, FM17556, FM17788, MF6181,
MF6478

**Avena fatua* L. wild oats 1; u; D. MF6187

**Bothriochloa ischaemum* (L.) Keng var. *songarica*
(Rupr. ex Fisch. & C.A. Mey.) Celarier & J.R.
Harlan, Turkestan bluestem, 4; s,m,u; O,D,C.
[*Andropogon ischaemum* L. var. *songaricus*
Rupr. ex Fisch. ex C.A. Mey. – A, F] FM17660,
FM17901, FM18384, FM18476, MF5988,
MF6335, MF6368

Bothriochloa laguroides (DC.) Herter subsp.
torreyana (Steud.) Allred & Gould, Silver
bluestem, 3; m,u; O,D,C. [*Andropogon*
saccharoides Sw. – A; *A. saccharoides* Sw. var.
torreyanus (Steud.) Hack. – F] FM17555,
FM17790, FM17831, MF6021, MF6135,
MF6244

Bouteloua curtipendula (Michx.) Nash var.
curtipendula, Side-oats grama, 5; s,m; O,D,C.
FM17531, FM17566, FM17789, FM17813,
MF6171, MF6310

Bouteloua gracilis (Willd. ex Kunth) Lag. ex
Griffiths, Blue grama, 2; m; C. L2001-98,
MF6311

Bouteloua hirsuta Lag. var. *hirsuta*, Hairy grama,
4; s,m; O,D,C. FM17539, FM17609, FM17777,
MF6172

**Bromus catharticus* Vahl var. *catharticus*, Rescue
brome, 3; u; O,D,C. [*B. unilioides* Kunth – A, F]
F16839, MF5957, MF6182, MF6216

**Bromus japonicus* Thunb., Japanese brome, 3; u;
O,D,C. F16953, MF5958, MF6117, MF6215,
MF6476

Buchloë dactyloides (Nutt.) Engelm., Buffalo grass,
4; m; O,D,C. F16933, MF6043, MF6164,
MF6219

Cenchrus spinifex Cav., Coast sandbur, 4; s,u; O. [*C.*
incertus M.A. Curtis – A, F] FM17649, MF5993

- Chloris verticillata* Nutt., Whorled windmill grass, 3; u; O,D,C. MF6166, MF6333, MF6480
- Chloris virgata* Sw., Showy windmill grass, 1; u; O,C. FM17845, FM18913
- **Cynodon dactylon* (L.) Pers., Common Bermuda grass, 2; u; O,C. FM17882, MF5956
- Dichanthelium oligosanthes* (Schult.) Gould var. *scribnerianum* (Nash) Gould, Scribner's panicum, 3; w,s; O,C. MF5936, MF6035, MF6367, MF6484
- **Digitaria ciliaris* (Retz.) Koeler, Southern crab grass, 1; u; O. [*D. adscendens* (Kunth) Henrard – A] FM17696
- Digitaria cognata* (Schult.) Pilg. subsp. *cognata*, Fall witch grass, 3; s,m; O. [*Leptoloma cognatum* (Schult.) Chase – A, F] FM17619, FM18285, MF6466
- **Digitaria sanguinalis* (L.) Scop., Hairy crab grass, 2; u; O. FM17909, FM18342, MF5978
- **Echinochloa crusgalli* (L.) P. Beauv., Common barnyard grass, 3; l,u; O,C. FM17612, FM17937, FM18376
- Echinochloa muricata* (P. Beauv.) Fernald var. *microstachya* Wiegand, Rough barnyard grass, 2; p,r,l; D,C. FM17794, FM18452, L2001-31
- Echinochloa muricata* (P. Beauv.) Fernald var. *muricata*, Rough barnyard grass, 3; p,r; O,D,C. FM17686, MF6156, MF6249, MF6394
- Elymus canadensis* L. var. *canadensis*, Canadian wild-rye, 3; w,s,m; O,D,C. MF5989, MF6151, MF6266, MF6432
- Elymus virginicus* L. var. *virginicus*, Virginia wild-rye, 2; w,m; O,C. FM17549, L2001-117, MF6377
- **Eragrostis barrelieri* Daveau, Mediterranean love grass, 1; u; O,C. FM18381a, FM18468
- **Eragrostis cilianensis* (All.) Vignolo ex Janch., Stink grass, 2; u; O,D. FM17563, FM17793, FM18334
- Eragrostis curtipedicellata* Buckley, Gummy love grass, 1; w; O. FM17682
- **Eragrostis curvula* (Schrad.) Nees var. *conferta* Stapf, Weeping love grass, 3; s,m,u; O,D,C. FM17569, FM17787, MF5963, MF6393, MF6434, MF6455
- Eragrostis pectinacea* (Michx.) Nees var. *pectinacea*, Carolina love grass, 3; u; O. FM17602, FM18381b, MF5977
- Eragrostis secundiflora* C. Presl subsp. *oxylepis* (Torr.) S.D. Koch, Red love grass, 1; s; O. [*E. oxylepis* (Torr.) Torr. – A] FM17564
- Eragrostis sessilispica* Buckley, Tumble love grass, 2; s; O. MF6048, MF6467
- Eragrostis spectabilis* (Pursh) Steud., Purple love grass, 2; s,m; O,C. FM18286, FM18445
- Eragrostis trichodes* (Nutt.) A.W. Wood, Sand love grass, 2; s; O. FM18288
- Eriochloa contracta* Hitchc., Prairie cup grass, 1; l; D. FM17795
- Erioneuron pilosum* (Buckley) Nash var. *pilosum*, Hairy tridens, 4; s,m; O,D,C. [*Tridens pilosus* (Buckley) Hitchc. – A, F] MF6087, MF6221, MF6464
- Hordeum jubatum* L., Fox-tail barley, Squirrel-tail grass, 3; s,m,l; D. MF5968, MF6184
- Hordeum pusillum* Nutt., Little barley, 4; s,m; O,D,C. MF5992, MF6157, MF6218
- Leersia oryzoides* (L.) Sw., Rice cut grass, 3; p,r,l; O,C. FM17688, FM18351, FM18447
- **Lolium perenne* L. var. *aristulatum* Willd., Perennial rye grass, 1; u; D. MF6180
- Muhlenbergia asperifolia* (Nees & Meyen ex Trin.) Parodi, Alkali muhly, Scratch grass, 3; r,l; O,D. FM17637, FM18347, FM18434
- Muhlenbergia mexicana* (L.) Trin., Mexican wire-stem muhly, 1; w; C. FM17818
- Muhlenbergia racemosa* (Michx.) Britton et al., Marsh muhly, 1; w,p,r; O. FM18344
- Muhlenbergia sobolifera* (Muhl. ex Willd) Trin., Rock muhly, 1; w; O. FM18345
- Panicum capillare* L. var. *barbipulvinatum* (Nash) McGregor, Common witch grass, 2; l; C. FM18438
- Panicum capillare* L. var. *brevifolium* Vasey ex Rydb. & Shear, Common witch grass, 2; w; O. FM17675, FM18296
- Panicum dichotomiflorum* Michx., Fall panicum, 2; l,u; O. FM17618
- Panicum hillmanii* Chase, Hillman's panicum, 2; s,r; O. FM17570
- Panicum virgatum* L., Switch grass, 2; m,r,l; O,D,C. FM17617, FM17782, FM17866, FM18287
- Pascopyrum smithii* (Rydb.) Á. Löve, Western pasture-wheat, Western wheat grass, 4; m,r,l; O,D,C. [*Agropyron smithii* Rydb. – A, F] MF6040, MF6159, MF6268, MF6396
- Paspalum setaceum* Michx. var. *stramineum* (Nash) D.J. Banks, Thin paspalum, 3; s; O. FM17643, MF5972, MF6479

Phalaris caroliniana Walter, Reed canary grass, 2; r,l,u; O,D. MF5961, MF6132
 **Poa annua* L., Annual blue grass, 1; m,u; C. F16934
Poa arachnifera Torr., Texas blue grass, 1; s; O. MF6034
Poa arida Vasey, Plains blue grass, 4; w,m; O,D. F16870, F16885, F16903
 **Polypogon monspeliensis* (L.) Desf., Annual rabbit's-foot grass, 2; p,r,l; O,C. MF5966, MF6243
Schedonnardus paniculatus (Nutt.) Trel., Tumble grass, 2; s,m; O,D,C. MF6165, MF6217, MF6465
Schizachyrium scoparium (Michx.) Nash subsp. *scoparium*, Little bluestem, 5; s,m; O,D,C. [*Andropogon scoparius* Michx. – A, F] FM 17531, FM17596, FM17785, FM17895, FM18400
 **Secale cereale* L., Rye, 1; u; O. MF6012, MF6460
Setaria parviflora (Poir.) Kerguelen, Knot-root bristle grass, 4; p,r,l; O,D,C. [*S. geniculata* (Lam.) P.Beauv. – A,F] FM17583, FM17723, FM17744, FM17886
 **Setaria viridis* (L.) P.Beauv., Green bristle grass, 3; u; O,C. FM17697, FM17911, MF5947, MF6376
Sorghastrum nutans (L.) Nash, Indian grass, 4; s,m,r; O,D,C. FM17786, FM18352, FM18460
 **Sorghum halepense* (L.) Pers., Johnson grass, 3; u; O,D,C. FM17669, FM18326, MF6423, MF6450, MF6492
Sphenopholis obtusata (Michx.) Scribn. var. *obtusata*, Prairie wedgescale, 1; w; O. MF5962
Sporobolus clandestinus (Biehler) Hitchc., South-eastern dropseed, 2; s; O. [*S. asper* (P. Beauv.) Kunth var. *clandestinus* (Biehler) Shinnners – A, F] FM18294
Sporobolus compositus (Poir.) Merr. var. *compositus*, Tall dropseed, 4; m; D. [*S. asper* (P. Beauv.) Kunth – A, F] FM18401
Sporobolus cryptandrus (Torr.) A. Gray, Sand dropseed, 4; s,m,u; O,D,C. FM17551, FM17915, L2001-40, MF6179, MF6334, MF6485
Sporobolus vaginiflorus (Torr. & A. Gray) A.W. Wood, Poverty dropseed, 3; u; O,C. FM18277, FM18367
Tridens albescens (Vasey) Wooton & Standl., White tridens, 3; w,m,l; D,C. FM17554, L2001-34, MF6160, MF6251
Tridens flavus (L.) Hitchc. var. *flavus*, Purpletop, 3; w,s,m,u; O,C. FM17677, FM18295, FM18451

Tridens muticus (Torr.) Nash var. *elongatus* (Buckley) Shinnners, Slim tridens, 1; m; C. FM18450
Triplasis purpurea (Walter) Chapm. var. *purpurea*, Purple sand grass, 2; s; O. FM18292
Trisetum interruptum Buckley, Prairie trisetum, 3; s,m; D,C. MF6088, MF6214
 **Triticum aestivum* L., Bread wheat, 1; u; D. MF6115
Vulpia octoflora (Walter) Rydb. var. *glauca* (Nutt) Fernald, Six-weeks annual-fescue, 4; m; O,D,C. [*Festuca octoflora* Walter – A, F] FL16834, FL16884, MF5960, MF6203, MF6475

POLEMONIACEAE

Ipomopsis longiflora (Torr.) V.E. Grant, Long-flower ipomopsis, 2; s,m; O,C. FM18368, Ts.n.

POLYGALACEAE

Polygala alba Nutt., White milkwort, 3; s,m; O,D,C. F16923, MF6067, MF6105, MF6204
Polygala verticillata L., Whorled milkwort, 2; s; O. FM17674, FM17707, MF6063

POLYGONACEAE

Eriogonum alatum Torr. var. *glabriusculum* Torr., Winged wild-buckwheat, 4; m; O,D,C. FM17544, FM17623, FM17757, FM17809, FM18390, FM18479, L2000-83, L2001-19, L2001-75
Eriogonum annuum Nutt., Annual wild-buckwheat, 4; s,m; O,D,C. FM17575, FM17891, FM17922, FM18320, FM18388, L2001-88
Eriogonum longifolium Nutt. var. *longifolium*, Lance-leaf wild-buckwheat, 4; s,m; O,D,C. FM17545, FM17585, FM17756, FM17810, FM18389, FM18478, L2001-15, MF6286
 **Polygonum arenastrum* Boreau, Sand knotweed, Doorweed, 3; u; O,C. MF5996, MF6237, MF6388
Polygonum lapathifolium L., Pale smartweed, Dock-leaf smartweed, 2; r,l; O,D,C. FM17749, FM18353, L2001-84, MF6248
Polygonum ramosissimum Michx., Bushy knotweed, 2; w; O,D. FM17715, FM18354, L2001-21
Polygonum tenue Michx., Pleat-leaf knotweed, Slim knotweed, 2; s; O. FM17635, FM17699, FM18284
Rumex altissimus A.W. Wood, Pale dock, 2; l; C. MF6315

**Rumex crispus* L., Curly dock, 2; l, u; O, D, C. MF5942, MF6369

PORTULACACEAE

Portulaca oleracea L., Common purslane, 2; s, l, u; O, D, C. FM17577, F17799, FM17824

Talinum calycinum Engelm., Rock-pink fameflower, 1; s; O. FM17737

POTAMOGETONACEAE

Potamogeton nodosus Poir., Long-leaf pondweed, 3; l; D, C. FM17854, FM18413

Stuckenia pectinata (L.) Börner, Sago pondweed, 2; l; O, D, C. [*Potamogeton pectinatus* L. – A, F] FM17844, FM18375, MF6329

PRIMULACEAE

Androsace occidentalis Pursh, Western rock-jasmine, 2; m; O, D. F16830, F16894

Samolus parviflorus Raf., Small water-pimpernel, 3; p, r, l; O, D, C. FM17724, FM17758, FM17857, FM18441, MF5967

RANUNCULACEAE

Anemone berlandieri Pritz., Ten-petal anemone, 3; m; O, D, C. F16872

Delphinium carolinianum Watler subsp. *virescens* (Nutt.) R.E. Brooks, Plains larkspur, 2; s, m; O, D, C. [*D. virescens* Nutt. – A; *D. virescens* Nutt. subsp. *penardii* (Huth) Ewan – F] MF6032, MF6145, MF6193

Ranunculus cymbalaria Pursh, Shore buttercup, 2; l; D, C. FM17880, FM18443

Ranunculus sceleratus L. var. *sceleratus*, Cursed crowfoot, Blister buttercup, 2; l; O, C. FM18442, MF5969, MF6282

RHAMNACEAE

Ceanothus herbaceus Raf., Inland ceanothus, 3; s, m; O, D, C. [*C. herbaceus* Raf. var. *pubescens* (Torr. & A. Gray ex S. Watson) Shinnery – A, F] F16844, FM17520, FM17781, MF6001

ROSACEAE

Geum canadense Jacq., White avens, 2; w; O, C. MF5935, MF6365

Potentilla paradoxa Nutt., Bushy cinquefoil, 2; l; D, C. FM17742, FM18455

Prunus angustifolia Marshall, Chickasaw plum, Sandhill plum, 3; s, m; O, D, C. MF6060, MF6322, MF6323, MF6355, MF6459

Prunus gracilis Engelm. & A. Gray, Oklahoma plum, 2; s; O. F16883, FM17627, MF6429, MF6458

Rubus bushii L.H. Bailey, Bush's blackberry, 1; w; O. MF5964

RUBIACEAE

Cephalanthus occidentalis L., Common button-bush, 3; m, r, l; D, C. FM17764, FM17867

Galium aparine L., Catch-weed bedstraw, 2; w, u; O, C. F16912, MF5939, MF6303

Galium circaezans Michx., Forest bedstraw, 3; w; O, C. FM17870, MF5938, MF6363

Hedyotis nigricans (Lam.) Fosberg var. *nigricans*, Narrow-leaf bluets, 3; s, m; O, D, C. FM17706, MF6019, MF6097, MF6246, MF6416

SALICACEAE

Populus deltoides W. Bartram ex Marshall subsp. *monilifera* (Aiton) Eckenw., Plains cottonwood, 5; w, m; O, D, C. F16905, FM18383, MF6319, MF6456

Salix exigua Nutt. subsp. *interior* (Rowlee) Cronquist, Sandbar willow, 2; w, r, l; O, D, C. F16906, FM17729, FM17766, FM18425

Salix nigra Marshall, Black willow, 2; w, r, l; O, C. F16889, MF6279

SANTALACEAE

Comandra umbellata (L.) Nutt. subsp. *pallida* (A. DC.) Piehl, Umbellate bastard toad-flax, 2; m; D, C. F16851, MF6295

SAPINDACEAE

Sapindus saponaria L. var. *drummondii* (Hook. & Arn.) L.D. Benson, Southern soapberry, 3; w, m; D, C. [*S. drummondii* Hook. & Arn. – A] FM17820, MF6325

SAPOTACEAE

Sideroxylon lanuginosum Michx. subsp. *oblongifolium* T.D. Penn., Woolly jungle-plum, Chittimwood, 3; w, m; O, D, C. [*Bumelia lanuginosa* (Michx.) Pers. var. *oblongifolia* (Nutt.) R.B. Clark – A, F] FM17816, FM18338, FM18430, MF5995, MF6324

SCROPHULARIACEAE

Agalinis aspera (Douglas ex Benth.) Britton, Rough agalinis, 2; m; D, C. FM18387, L2001-10, L2001-73

Castilleja purpurea (Nutt.) G. Don var. *citrina* (Pennell) Shinnery, Citron paintbrush, 3; m; O, D, C. F16860, F16942, MF6306, MF6497

Castilleja sessiliflora Pursh, Downy paintbrush, 3; m; D. F16846

Nuttallanthus texanus (Scheele) D.A. Sutton, Texas toad-flax, 3; s; O. [*Linaria canadensis* (L.) Dumort. var. *texana* (Scheele) Pennell – A, F] F16888

Penstemon albidus Nutt., White beardtongue, 4; m; D, C. F16900, MF6253, MF6341

Penstemon buckleyi Pennell, Buckley's beardtongue, 2; s; O. F16877, MF6452

Penstemon cobaea Nutt. var. *cobaea*, Cobaea beardtongue, 3; m; D, C. FM17523, L2001-93, MF6101, MF6190, MF6401

Penstemon fendleri Torr. & A. Gray, Fendler's beardtongue, 2; m; D. F16823, MF6342

**Veronica catenata* Pennell, Blue water speedwell, 2; p, r; O. MF5965

Veronica peregrina L. subsp. *xalapensis* (Kunth) H. St. John & F.A. Warren, Purslane speedwell, 2; w, m, l; D. F16842, MF6356

SMILACACEAE

Smilax hispida Muhl. ex Torr., Bristly greenbrier, 1; w; C. MF6382

SOLANACEAE

Chamaesaracha coniodes (Moric. ex Dunal) Britton, Dusty false-nightshade, 2; m; D, C. F16867, MF6169, MF6264

Datura inoxia Mill., Hairy thorn-apple, 1; w, u; O. [*D. meteloides* DC. – A; *D. wrightii* Regel – A] FM18331

Physalis cinerascens (Dunal) Hitchc. var. *cinerascens*, Ashy ground-cherry, 3; w, s, m; O, D, C. [*P. viscosa* L. subsp. *mollis* (Nutt.) Waterf. var. *cinerascens* (Dunal) Waterf. – F; *P. viscosa* L. var. *cinerascens* (Dunal) Waterf. – A] FM17684, MF6109, MF6174, MF6240, MF6496

Physalis longifolia Nutt. var. *longifolia*, Long-leaf ground-cherry, 3; s, m; O, C. MF6425, MF6426, MF6495

Quincula lobata (Torr.) Raf., Purple ground-cherry, 3; m, u; D, C. F16852, MF6175, MF6241

Solanum dimidiatum Raf., Western horse-nettle, 3; s, m; O, D, C. FM17710, FM18900, FM17927, FM18429, MF6057

Solanum elaeagnifolium Cav., Silver-leaf nightshade, 3; s, m; O, D, C. FM17829, MF5984, MF6126, MF6227, MF6493

Solanum interius Rydb., Plains black nightshade, 1; u; C. FM18469

Solanum rostratum Dunal, Buffalo-bur night-

shade, 2; s, m, l, u; O, D, C. FM17620, MF6155, MF6226

TAMARICACEAE

**Tamarix ramosissima* Ledeb., Salt-cedar, 2; p, r, l; O, D, C. FM17760, MF5983, MF6321

TYPHACEAE

Typha domingensis Pers., Southern cat-tail, 4; p, l; O, C. FM17622, FM17687, FM17878, FM18378

ULMACEAE

Celtis laevigata Willd., Sugar hackberry, Sugarberry, 1; w; C. MF6381

Celtis reticulata Torr., Net-leaf hackberry, 4; w, m; O, D, C. F16882, FM18358, MF5954, MF6141, MF6326

Ulmus americana L., American elm, 4; w; O, D, C. F16871, MF5952, MF6142, MF6320

URTICACEAE

Parietaria pennsylvanica Muhl. ex Willd., Pennsylvania pellitory, 2; w, m; O, C. F16895, MF6281, MF6371

VERBENACEAE

Glandularia bipinnatifida (Nutt.) Nutt. var. *bipinnatifida*, Dakota vervain, 3; m; D, C. [*Verbena bipinnatifida* Nutt. – A, F] F16920, MF6147, MF6270

Phyla lanceolata (Michx.) Greene, Northern fogfruit, Lance-leaf fogfruit, 2; p, l; O, C. [*Lippia lanceolata* Michx. – F] FM17722, FM17887

Phyla nodiflora (L.) Greene, Turkey-tangle, Common fogfruit, 3; l; D, C. [*Lippia nodiflora* (L.) Michx. var. *nodiflora* – F; *P. incisa* Small – A] FM17745, FM17828, FM17862, FM18453, MF6150, MF6309

Verbena bracteata Lag. & Rodr., Prostrate vervain, 2; u; O, D, C. L2001-24, MF5980, MF6271

Verbena hastata L., Blue vervain, 1; p, r; O. FM17720

Verbena stricta Vent., Hoary vervain, 2; s, m, u; O, C. FM17605, FM17885

Verbena urticifolia L., Nettle-leaf vervain, 2; w; O. FM17676

VIOLACEAE

Viola bicolor Pursh, Johnny-jump-up, 3; w, u; O, C. [*V. rafinesquii* Greene – A, F] F16907, MF6078

Viola pratincola Greene, Meadow violet, 1; w, r; O. F16893

VITACEAE

Ampelopsis cordata Michx., Heart-leaf raccoon-

grape, 3; w; O,C. FM17690, FM17730, FM17783, FM17871, MF5944, MF6391
Parthenocissus quinquefolia (L.) Planch., Virginia creeper, 3; w; O,D,C. FM17673, FM17770, MF5946, MF6328, MF6387
Parthenocissus vitacea (Knerr) Hitchc., Thicket creeper, Woodbind, 2; w; D. FM18427

Vitis acerifolia Raf., Bush grape, 3; w,s,m; O,D,C. FM17864, FM18426, MF6059, MF6158, MF6276

ZYGOPHYLLACEAE

**Tribulus terrestris* L., Spreading puncturevine, Goat's-head, 1; u; D. FM17943

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